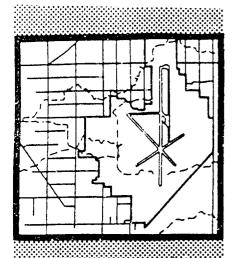
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INSTALLATION RESTORATION PROGRAM STAGE 3 McCLELLAN AIR FORCE BASE

PREPARED BY:
Radian Corporation
10395 Old Placerville Road
Sacramento, California 95827

JUNE 1989

DATA SUMMARY
JANUARY - MARCH 1989

FINAL



PREPARED FOR: HEADQUARTERS AFLC/DEV WRIGHT-PATTERSON AFB, OHIO 45433

United States Air Force
Occupational and Environmental Health Laboratory (USAFOEHL)
Technical Services Division (TS)
Brooks Air Force Base, Texas 78235-5501



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McCLELLAN AFB, CALIFORNIA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
GROUNDWATER SAMPLING AND ANALYSIS PROGRAM
JANUARY THROUGH MARCH 1989
DATA SUMMARY

FINAL COPY

HEADQUARTERS AFLC/DEV WRIGHT-PATTERSON AFB, OHIO 45433

JUNE 1989

Prepared by:

Radian Corporation 10395 Old Placerville Road Sacramento, CA 95827

AF CONTRACT NO.: F33615-87-D-4023, DELIVERY ORDER NO. 0003

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AFOEHL Technical Services Division (TS)
Mr. Dale Dietzel
Technical Program Manager

United States Air Force
Occupational and Environmental Health Laboratory (AFOEHL)
Technical Services Division (TS)
Brooks Air Force Base, Texas 78235-5501

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This data summary has been prepared for the United States Air Force for the purpose of aiding in the implementation of a final remedial action plan under the Air Force Installation Restoration Program (IRP). As the data summary relates to actual or possible releases of potentially hazardous substances, its release prior to an Air Force final decision on remedial action is in the public interest. The limited objectives of this data summary and the ongoing nature of the IRP, along with the evolving knowledge of site conditions and chemical effects on the environment and health, must be considered when evaluating this data summary, since subsequent facts may become known which may make this data summary premature or inaccurate. Acceptance of this data summary in performance of the contract under which it was prepared does not mean that the U.S. Air Force or the Department of Defense adopts the conclusions, recommendations, or other views expressed herein, which are those of the contractor only and do not necessarily reflect the official position of either department.

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DEPARTMENT OF THE AIR FORCE

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EM

McClellan AFB Data Summary, Jan - Mar 89, Final Report

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- 1. Attached is the final copy of the Data Summary for the period of Jan - Mar 89. Groundwater Samples were collected from a total of 88 wells during this period. These wells included 78 monitoring wells, 6 Area D extraction wells, and 4 Area C extraction wells.
- 2. If there any questions regarding this report, contact Mr Jerry Robbins, SM-ALC/EMR, (916) 643-1250.

PAUL G. BRUNNER

Deputy Director

Environmental Management

1 Atch Jun 89 Data Summary Report

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PREFACE

Radian Corporation is the contractor for the Installation Restoration Program (IRP), Stage 3 Remedial Investigation/Feasibility Study (RI/FS) at McClellan Air Force Base (AFB), California. The work is being performed for the AF Occupational and Environmental Health Laboratory (AFOEHL) under AF Contract No. F33615-87-D-4023.

This Data Summary summarizes and presents the results of the Sampling and Analysis Program, January through March 1989. The data presented include analytical results for groundwater samples collected from monitoring and extraction wells, and groundwater level data measured from wells on and in the vicinity of McClellan AFB. These data are used to evaluate current interim remedial measures and to identify the need for future remedial measures.

Key Radian project personnel were:

Nelson Lund, P.E. - Contract Program Manager Jack D. Gouge' - Delivery Order Manager Morey Lewis - Project Manager Marie T. McCrink - Project Director

Radian acknowledges the cooperation of the McClellan AFB Office of Environmental Management. In particular, Radian acknowledges the assistance of Mr. Mario Ierardi, Mr. Bud Hoda, and Mr. Gerald Robbins.

The work presented herein was accomplished between 01 January 1989 and 18 June 1989. Mr. Dale Dietzel, Technical Services Division, AF Occupational and Environmental Health Laboratory (AFOEHL/TS) was the technical monitor.

Approved

Nelson Lund

Contract Program Manager

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EXECUTIVE SUMMARY

In support of ongoing Remedial Investigation/Feasibility Study (RI/FS) activities at McClellan Air Force Base (AFB), California, Radian personnel measure groundwater levels, collect, and analyze groundwater samples from on- and off-base wells on a quarterly basis. These activities determine the direction of groundwater flow, identify the presence of groundwater contaminants, and identify and evaluate any trends in groundwater flow or concentrations of contaminants that may be developing, with respect to time. This Data Summary presents the sampling and analytical results collected during the sampling period of January through March 1989. Evaluations of trends in groundwater flow and concentrations of contaminants for all regularly monitored wells within the study area will be presented in the 1990 Annual Technical Report.

Groundwater levels were measured over a three-day period prior to collecting groundwater samples. Water levels were measured on 03, 04, and 05 January 1989. Water-level data are used to generate potentiometric surface maps to identify groundwater flow patterns beneath McClellan AFB (Plates 2, through 6). Groundwater generally flows to the south-southwest in the north-eastern portion of the Sacramento area. In the vicinity of McClellan AFB, deviations from this general direction of flow can be identified by the configuration of the contours on the potentiometric surface maps produced from the water-level data. These local deviations from the regional flow pattern are due to operation of extraction wells in Area D, on-base water supply wells, and off-base water supply wells.

As a result of continuous pumping by the six Area D extraction wells, a cone of depression continues to be observed on potentiometric surface maps for the shallow and middle monitoring zones in the northwest corner of the base. The effectiveness of the Area D extraction system was evaluated based on hydraulic gradient criteria and long-term changes in Trichloroethene (TCE) concentrations for selected monitoring wells. The shallow zone monitoring wells located outside the extraction well field have shown a decrease followed by recent stabilizing of TCE concentrations over the past several

sampling events; three middle zone monitoring wells within the influence of the extraction wells have shown decreasing TCE concentrations; and TCE has not been detected in the two deep zone monitoring wells during the most recent sampling period.

The effect of the Area C extraction system on groundwater levels cannot be seen on potentiometric maps, except for a slight effect on the configuration of the contours for the deep "A" monitoring zone map. Additional monitoring wells are needed to evaluate the effect of the extraction system on hydraulic heads in Area C. The Air Force has identified locations for piezometers to monitor water levels in Area C that can be used to evaluate the effectiveness of the extraction system. This work is scheduled for 1989 and 1990 as part of the Preliminary Groundwater Operable Unit Remedial Investigation (PGOURI) (Radian, March 1989).

Groundwater flow directions in the east-central portion of the base are still not well defined. The local flow of groundwater in this area of the base is influenced by active base production well BW-10. However, there is limited water-level data, and the influence of this well cannot be seen on the potentiometric surface maps. To remedy this, several additional monitoring wells will be installed during 1989 in this and other areas of the base as part of the PGOURI (Radian, March 1989).

A cone of depression beneath the southern portion of the base (Area B and the Southwest Area) can be recognized on the monthly potentiometric surface maps. The cone of depression evident in the shallow and middle monitoring zone potentiometric surface maps apparently results from pumping of base production well BW-18, as well as off-base water supply wells. The cone of depression probably extends into the deep monitoring zone; however, due to the absence of deep zone monitoring wells in this area, the areal and vertical extent of the cone of depression cannot be defined. Pumping of other production wells to the south of Area B by the City of Sacramento may also be influencing the water levels in the southwest area.

Based on the existing monitoring well network, groundwater flow across the base can be summarized as follows. Groundwater flow is from the 1q89dasuFI/061589/hmm S-2

north to the south in the northern end of the base. In Area D, groundwater converges toward the extraction system. In Area C, groundwater flow is toward the south. Near the extraction wells, flow is toward the wells; however, the zone of influence of the extraction wells cannot be defined with the existing monitoring wells. In the east, groundwater flow appears to be from the north/northeast to the south/southwest. The local effects of on-base water supply wells cannot be defined with the existing monitoring wells. In Area A, groundwater appears to be flowing to the southwest. In Area B, groundwater flow is toward BW-18.

Groundwater samples were collected and analyzed from 78 monitoring wells, 6 Area D extraction wells and 4 Area C extraction wells during January 1989. In addition, samples were collected and analyzed from the 10 extraction wells in February and March 1989. The analytical results for these samples were evaluated based on established Quality Assurance/ Quality Control (QA/QC) procedures. This evaluation ensures that all analytical results that did not meet the applicable acceptance criteria are not reported without qualification. Data acceptability was determined by evaluating field and laboratory blanks, field duplicates, matrix spikes, matrix spike duplicates, analytical spikes, and surrogate spikes.

The objectives for accuracy, precision, and completeness were met, and overall analytical and sampling performance was acceptable. Based on review of the analytical data, no significant problems in overall quality control were identified. Although there were a few occurrences of laboratory and field contamination, this contamination did not affect the overall quantitation of analytes of interest in the groundwater. Therefore, no overall adverse qualification or rejection of the data is necessary. Any data outside stated objectives were qualified. The completeness objective of having more than 90 percent usable data has been met because more than 99 percent of the data have been validated and are unqualified.

Following the evaluation of the quality control (QC) procedures, analytical results were compared to state and federal drinking water standards. Thirty-six wells (10 extraction wells and 26 monitoring wells) con-

tained contaminants at concentrations exceeding California Department of Health Services (DHS) action levels and/or United States Environmental Protection Agency (U.S. EPA) Primary Maximum Contaminant Levels (PMCLs) (Table S-1). The wells exceeding drinking water standards are located on base in Areas A, B, C, and D and Adjacent On-Base Areas and off base in the Northwest and Southwest Areas.

New Findings

Analytical results for this period of groundwater sampling and analyses activities are similar to results obtained during the previous sampling period (October through December, 1988). During this sampling period, samples from 36 wells contained concentrations of analytes that exceeded state or federal drinking water standards. During the previous sampling period, 36 wells also contained compounds at concentrations exceeding drinking water standards.

Some notables changes in contaminant concentrations between the last sampling period and this sampling period were observed. In MW-41S, a shallow zone monitoring well located in Area B. TCE concentrations have increased from 2,900 to 3,300 ug/L (ppb). In January 1988, the TCE concentration in this well was 140 ug/L. In MW-55, a middle zone monitoring well located in Area D, significant decreases for five Method 8010 analytes have occurred. The five analytes have been decreasing in this well over the past several sampling events and are now below drinking water standards. For MW-41S and MW-55, these changes do represent statistically verifiable trends and were discussed in detail in the working copy of the Annual Technical Report (Radian, April 1989). Three shallow monitoring zone wells (MW-10, MW-12, and MW-15), also in Area D, have shown significant decreases in contaminant concentrations. However, these changes do not represent statistically verifiable trends. These wells will be re-evaluated for long-term statistical trends in the 1990 Annual Technical Report after another four quarters of sampling have occurred.

TABLE S-1. WELLS CONTAINING ANALYTES AT CONCENTRATIONS EXCEEDING STATE AND FEDERAL DRINKING WATER STANDARDS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Well	Date				Field Duplicate			DHS Action	U.S. EPA Primary
Number		Area	Method	Analyte Detected	•		Concentration		MCL
EW - 73	01/05/89		8240	Vinyl chloride			2400		
EM-13	01/03/09	U	0240	1,1-Dichloroethene		SAC	2100 9900	2 6	1 7
				1,1-Dichloroethane		SAC		20	, NE
				Total 1,2-Dichloroethene		SAC		16	NE NE
				1,1,1.Trichloroethane		SAC		200	200
				Trichloroethene		SAC	_	5	5
EW-73	02/01/89	D	8010	Vinyl chloride		SAC	1500P	2	1
			Methylene chloride		SAC	1300P	40	NE	
				1,1-Dichloroethene		SAC	7000P	6	7
				1,1-Dichloroethane		SAC	800P	20	NE
				Total 1,2-Dichloroethene		SAC	730P	16	NE
				1,1,1-Trichloroethane		SAC	790P	200	200
				Trichloroethene		SAC	1100P	5	5
EW-73	03/01/89	D	8010	Vinyl chloride		SAC	1000P	2	t
				1,1-Dichloroethene		SAC	5400P	6	7
				1,1-Dichloroethane		SAC	930P	20	NE
				Total 1,2-Dichloroethene		SAC	740P	16	NE
				1,1,1-Trichloroethane		SAC	930P	200	200
				Trichloroethene		SAC	690P	5	5
			8020	Toluene		SAC	220C	100	NE
EW-83	01/04/89	D	8010	1,1-Dichloroethene		SAC	390P	6	7
				Trichloroethene		SAC	41P	5	5
EW-83	02/02/89	D	8010	Methylene chloride		SAC	150C	40	NE
				1,1-Dichloroethene		SAC	650C	6	7
				Tetrachloroethene		SAC	7.8C	4	NE
EW-83	03/01/89	D	8010	1,1-Dichloroethene		SAC	410P	6	7
				Trichloroethene		SAC	42P	5	5
EW-84	01/10/89	D	8010	Vinyl chloride	FDA	SAC	410P	2	1
				Methylene chloride	FDA	SAC	40P	40	NE
				1,1-Dichloroethene	FDA	SAC	1200P	6	7

All units are ug/l.

FDA = First part of field duplicate sample

C = Presence of analyte confirmed by second column

P or PC = Identity previously confirmed

EW = Extraction well

NE = Not established

SAC = Radian Analytical Services, Sacramento

TABLE S-1. (continued)

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis		Concentration	DHS Action Level	U.S. EPA Primary MCL
							• • • • • • • • • • • • • • • • • • • •	• • • • • • • • •	
EW-84 0	01/10/89	D	8010	Total 1,2-Dichloroethene	FDA	SAC	230P	16	NE
				1,2-Dichloroethane	FDA	SAC	65P	1	5
				Trichloroethene	FDA	SAC	980P	5	5
			Vinyl chloride	FDB	SAC	620P	2	1	
			1,1-Dichloroethene	FD8	SAC	2000P	6	7	
				1,1-Dichloroethane	FDB	SAC	370P	20	NE
				Total 1,2-Dichloroethene	FDB	SAC	210P	16	NE
				1,2-Dichloroethane	FDB	SAC	56P	1	5
				1,1,1-Trichloroethane	FDB	SAC	210P	200	200
				Trichloroethene	FD8	SAC	1600P	5	5
EW-84 02/02/89	02/02/89	D	8010	Vinyl chloride		SAC	440C	2	1
			Methylene chloride		SAC	56C	40	NE	
				1,1-Dichloroethene		SAC	1300C	6	7
				1,1-Dichloroethane		SAC	207C	20	NE
				Total 1,2-Dichloroethene		SAC	220C	16	NE
				1,2-Dichloroethane		SAC	120C	1	5
				Trichloroethene		SAC	1200C	5	5
EW-84	03/01/89	D	8010	Vinyl chloride		SAC	350C	2	1
				1,1-Dichloroethene		SAC	860C	6	7
				1,1-Dichloroethane		SAC	180C	20	NE
				Total 1,2-Dichloroethene		SAC	190C	16	NE
				1,2-Dichloroethane		SAC	110C	1	5
				Trichloroethene		SAC	720C	5	5
EW-85	01/04/89	D	8010	1,1-Dichloroethene		SAC	600C	6	7
				1,2-Dichloroethane		SAC	13C	1	5
				Trichloroethene		SAC	400C	5	5
EW-85	02/02/89	D	8010	Methylene chloride		SAC	92P	40	NE
				1,1-Dichloroethene		SAC	880P	6	7
				Trichloroethene		SAC	660P	5	5
EW-85	03/01/89	D	8010	1,1-Dichloroethene		SAC	550P	6	7
				1,1-Dichloroethane		SAC	26P	20	NE
				Trichloroethene		SAC	330P	5	5
EW-86	01/04/89	D	8010	1,1-Dichloroethene		SAC	100P	6	7
				Trichloroethene		SAC	42P	5	5

All units are ug/l.

EW = Extraction well

NE = Not established

SAC = Radian Analytical Services, Sacramento

FDA = First part of field duplicate sample

FDB = Second part of field duplicate sample

C = Presence of analyte confirmed by second column

P or PC = Identity previously confirmed

TABLE S-1. (continued)

:::::::::::::::::::::::::::::::::::::::	:::::::::::::::::::::::::::::::::::::::	=====	======	:::::::::::::::::::::::::::::::::::::::					***********
					Field			DHS	U.S. EPA
Well	Date				Duplicate			Action	Primary
Number	Sampled	Area	Method	Analyte Detected	Analysis	Lab	${\tt Concentration}$	Level	MCL
EW-86	02/02/89	D	8010	1,1-Dichloroethene		SAC	74P	6	7
	,,	-		Trichloroethene		SAC	40P	5	5
						31.13		-	•
EW-86	03/01/89	D	8010	1,1-Dichloroethene		SAC	56P	6	7
				Trichloroethene		SAC	25P	5	5
EW-87	01/05/89	D	8010	1,1-Dichloroethene		SAC	100P	6	7
EW-0/	01/03/09	U	5010	Trichloroethene		SAC		5	5
				irichtoroethene		SAC	396	,	,
EW-87	02/02/89	D	8010	1,1-Dichloroethene		SAC	140C	6	7
				Trichloroethene		SAC	58C	5	5
EW-87	03/01/89	D	8010	1,1-Dichloroethene		SAC	1000	6	7
				Trichloroethene		SAC	36C	5	5
EU. 137	01/12/89	c	8010	Trichloroethene		SAC	490C	5	5
LW 157	01/12/07	•	00.0	Tr tontor bethere		ONC	4700	,	,
EW-137	02/02/89	C	8010	Trichloroethene		SAC	480C	5	5
EW-137	03/01/89	С	8010	Trichloroethene		SAC	310P	5	5
FU-140	01/12/89	C	8010	Total 1,2-Dichloroethene		SAC	28C	16	NE
	01,712,00	•	00.0	Trichloroethene		SAC		5	5
				Transfer between		JAC	1400	,	,
EW-140	02/02/89	C	8010	Total 1,2-Dichloroethene		SAC	30C	16	NE
				Trichloroethene		SAC	160C	5	5
EW-140	03/01/89	С	8010	Total 1,2-Dichloroethene		SAC		16	NE
				Trichloroethene		SAC	93c	5	5
EW-141	01/12/89	С	8010	Total 1,2-Dichloroethene		SAC	26C	16	NE
	o 1, 12, 21	_		Trichloroethene		SAC		5	5
				The state of the s			2300	•	•
EW-141	02/02/89	C	8010	Total 1,2-Dichloroethene		SAC	20C	16	NE
				Trichloroethene		SAC	210C	5	5
EW-141	03/01/89	С	8010	Trichloroethene		SAC	120P	5	5
EU- 144	01/18/89	c	8010	Trichloroethene		SAC	310C	5	5
/ 	-1, 10,07	•	8240	Trichloroethene		SAC		5	5
			-E40	II TOILUI OCCITETE		JAL	300	,	,

All units are ug/l.

C = Presence of analyte confirmed by second column

EW = Extraction well

P or PC = Identity previously confirmed

NE = Not established

SAC = Radian Analytical Services, Sacramento

TABLE S-1. (continued)

		======	=======			====		:=======	
					Field			DHS	U.S. EPA
Well	Date				Duplicate			Action	Primary
Number	Sampled	Area	Method	Analyte Detected	Analysis	Lab	Concentration	Level	MCL
· · · · · · · · · · · · · · · · · · ·						••••			
EW-144	02/02/89	С	8010	Trichloroethene		SAC	340C	5	5
EW-144	03/01/89	С	8010	Trichloroethene		SAC	240C	5	5
MW-10	01/25/89	D	8010	Vinyl chloride		SAC	73C	2	1
				1,1-Dichloroethene		SAC	840C	6	7
				1,1-Dichloroethane		SAC	110C	20	NE
				Total 1,2-Dichloroethene		SAC	130C	16	NE
				1,2-Dichloroethane		SAC	250C	1	5
				Trichloroethene		SAC	_ 1300C	5	5
				1,2-Dichlorobenzene		SAC	140C	130	NE
			8020	1,2-Dichlorobenzene		SAC	140P	130	NE
MU-11	01/31/89	D	8010	1,1-Dichloroethene		SAC	19000C	6	7
				1,1-Dichloroethane		SAC	270c	20	NE
				Total 1,2-Dichloroethene		SAC	190C	16	NE
				1,1,1-Trichtoroethane		SAC	5600C	200	200
				Trichloroethene		SAC	2900C	5	5
MW-12	01/25/89	n	8010	1,1-Dichloroethene		SAC	2600P	6	7
	01,25,07	•	50.0	1,1,1-Trichtoroethane		SAC	360P	200	200
				Trichloroethene		SAC	590P	5	5
				Tetrachloroethene		ŞAC	38P	4	NE
MU-14	01/26/89		8010	1 1 Diahlanashara		SAC	4600C	6	7
PW - 14	01/20/09	U	8010	1,1-Dichloroethene 1,2-Dichloroethane		SAC	34C	1	5
				•				200	
				1,1,1-Trichloroethane Trichloroethene		SAC		5	200 5
				Trichtoroethene		SAC	41000	,	,
MW-15	01/25/89	D	8010	1,1-Dichloroethene		SAC	580C	6	7
				Trichloroethene		SAC	340C	5	5
MW-260	01/23/89	A	8010	Trichioroethene		SAC	22C	5	5
MW-33\$	01/11/89	С	8010	Methylene chloride		SAC	1100U	40	NE
				Total 1,2-Dichloroethene		SAC	580P	16	NE
				1,2-Dichloroethane		SAC		1	5
				Trichloroethene		SAC		5	5
MU. 410	01/16/89		8010	Trichloroethene		SAC	3300C	5	5

All units are ug/L.

EW = Extraction well

MW = Monitoring well

NE = Not established SAC = Radian Analytical Services, Sacramento

C = Presence of analyte confirmed by second column

P or PC = Identity previously confirmed

U = Unconfirmed, second column not requested

TABLE S-1. (continued)

			rżeniu:		Field		*=======	DHS	U.S. EPA
Well	Date				Duplicate				Primary
Number	Sampled	Area		Analyte Detected			Concentration		MCL
MW-41S	01/16/89	В	8010	Tetrachloroethene		SAC	240C	4	NE
MW-44S	01/18/89	С	6010	Chromium		SAC	55	NE	50
MW-61	01/20/89	С	8010	Trichloroethene		SAC	12C	5	5
MW-63	01/19/89	В	8010	Total 1,2-Dichloroethene	FDA	SAC	29C	16	NE
	.,	_		Trichloroethene	FDA	SAC	55C	5	5
				Total 1,2-Dichloroethene	FDB	SAC	31C	16	NE
				Trichloroethene	FDB	SAC	_ 59C	5	5
MW-72	01/06/89	D		1,1-Dichloroethene		SAC	370P	6	7
				1,1-Dichloroethane		SAC	49P	20	NE
				Total 1,2-Dichloroethene		SAC	34P	16	NE
				1,2-Dichloroethane		SAC	130P	1	5
				Trichloroethene		SAC	550P	5	5
MW - 75	01/25/89	c	8010	Trichloroethene		SAC	12C	5	5
MW-89	01/16/89	D	8010	1,1-Dichloroethene		SAC	6.2C	6	7
MW-120	01/10/89	В	8010	Trichloroethene	FDB	SAC	5.1C	5	5
MU-128	01/12/89	C.	8010	Methylene chloride		SAC	800C	40	NE
	01, 12,07	•		Total 1,2-Dichloroethene		SAC	190C	16	NE
				Trichloroethene		SAC	17000C	5	5
MW-129	01/12/89	С	8010	Trichloroethene	FDA	SAC	170C	5	5
				Trichloroethene	FDB	SAC	140C	5	5
MW-131	01/12/89	С	8010	Total 1,2-Dichloroethene		SAC	19P	16	NE
	,,	-		Trichloroethene		SAC	90P	5	5
MV-132	01/16/89	В	8010	Total 1,2-Dichloroethene		SAC	25C	16	NE
				Trichloroethene		SAC	82C	5	5
MW-135	01/16/89	С	8010	Trichloroethene		SAC	25C	5	5
MW-136	01/26/89	С	8010	Trichloroethene		SAC	230C	5	5
MW-139	01/16/89	С	8010	Total 1,2-Dichloroethene		SAC	26C	16	NE

All units are ug/l.

MW = Monitoring well

NE = Not established

SAC = Radian Analytical Services, Sacramento

FDA = First part of field duplicate sample

FDB = Second part of field duplicate sample

C = Presence of analyte confirmed by second column

P or PC = Identity previously confirmed

TABLE S-1. (continued)

======	========					=====	************	=======	*********
					Field			DHS	U.S. EPA
Well	Date				Duplicate			Action	Primary
Number	Sampled	Area	Method	Analyte Detected	Analysis	Lab	Concentration	Level	MCL
MW-139	01/16/89	С	8010	1,2-Dichloroethane		SAC	1.1C	1	5
				Trichloroethene		SAC	95C	5	5
			6010	Cadmium		SAC	33	NE	10
MW-1004	01/17/89	NW	8010	1,1-Dichloroethene		SAC	7.0P	6	7
MW-1005	01/13/89	NW	8010	1,1-Dichloroethene		SAC	20C	6	7
				Trichloroethene		SAC	5.20	5	5
MW-1021	01/19/89	SW	8010	Trichloroethene		SAC	_ 15C	5	5
MW-1022	01/19/89	SW	8010	Trichloroethene	FDA	SAC	9.10	5	5
				Trichloroethene	FDB	SAC	10C	5	5

All units are ug/l.

MW = Monitoring well

NW = Northwest area

SAC = Radian Analytical Services, Sacramento

FDA = First part of field duplicate sample

FDB = Second part of field duplicate sample

C = Presence of analyte confirmed by second column

P or PC = Identity previously confirmed

SW = Southwest area

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Recommendations

Recommendations are made based on field and analytical data acquired through this sampling period.

- Recently developed and redeveloped wells should be sampled for three sampling rounds to provide water quality data. The need for continued sampling of these wells can then be evaluated. These include the new wells in the Area B Operable Unit, and monitoring wells MW-7, MW-25D, MW-26D, MW-49, MW-64, MW-65, and MW-66;
- Provide access to a recently fenced-off monitoring well cluster, MW-111/112/113, located in the West Area. These wells would provide useful water level data, and an increasing contaminant trend observed in MW-111 should be monitored again; and
- o Maintenance work should be done on three Area D extraction wells (EW-73, EW-83, EW-84) with blocked sounding tubes. Unknown obstructions in these sounding tubes are preventing measurement of water levels.

1.0 GROUNDWATER SAMPLING AND ANALYSIS PROGRAM

The purposes of the field sampling activities are to obtain water level measurements and to obtain representative groundwater samples for chemical analyses. Water-level measurements were taken prior to sampling on 03, 04 and 05 January 1989, to provide data for evaluation of the groundwater flow regime beneath McClellan Air Force Base (AFB) and adjacent areas. Following water-level measurements, groundwater samples were collected from a total of 88 wells during the period of 05 January to 31 January 1989. Locations of wells on and off base are shown on Plate 1. The wells sampled included 78 monitoring wells, 6 Area D extraction wells and 4 Area C extraction wells. Of the 78 monitoring wells sampled, 58 are located on base and 20 are located off base.

Beginning in January 1989, the sampling frequency for 42 monitoring wells was reduced from quarterly to annually. A reduction in sampling frequency was recommended by Radian based on the sampling history of the wells, location of the wells and estimated groundwater flow rates. The 42 wells now on an annual sampling schedule all have a consistent sampling history of no analytes detected or unchanging concentrations of analytes. In addition, these wells are not located within 1,000 feet of active water supply wells or near the two on-base extraction systems. Groundwater flow rates in areas away from actively pumped wells are estimated to be less than 23 feet/month. Based on these considerations, annual sampling of these wells will yield adequate data on groundwater quality. The specific wells now scheduled for annual sampling are listed in Appendix A-1.

Three monitoring wells scheduled to be sampled during January could not be sampled for the following reasons:

- MW-53--purge and bladder pumps detached and blocking well;
- MW-74--access for sampling vehicle blocked by muddy conditions;
 and

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MW-76--access for sampling vehicle blocked by muddy conditions.

All groundwater samples collected were analyzed using United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Methods (U.S. EPA Third Edition, 1986). All samples collected were analyzed using a shortened list (Appendix A-2) of Method 8010 compounds. Selected samples were analyzed using Method 8020, Method 6010, Method 7196 and Method 8240.

A list of wells sampled and analyses performed during January through March 1989 is presented in Table 1-1. Locations of wells are shown on Plate 1.

A summary of the analytical results from the sampling period of January through March 1989 are presented in Tables 1-2 and 1-3. Contaminant levels in 36 wells exceeded California Department of Health Services (DHS) Action Levels and/or U.S. EPA Primary Maximum Contaminant Levels (Table 1-6). These wells (26 monitoring wells and 10 extraction wells) are located on base in Areas A, B, C, and D, except for 4 off-base monitoring wells located in the Northwest and Southwest Areas. During the previous sampling period, 36 wells also contained contaminants at concentrations above drinking water standards.

1.1 Results of Field Activities

Field activities include measuring water levels, monitoring three parameters during purging of the wells, and collecting water quality samples. The detailed procedures used to measure water levels and to collect water samples are described in the Quality Assurance Project Plan (QAPP) (Radian, April 1989). Briefly, after purging a minimum of three well volumes, measurement of the pH, temperature, and conductivity is used to verify that stagnant water in the well has been removed and fresh formation water will be sampled. When the pH, temperature, and conductivity have stabilized after purging and immediately prior to sample collection, the well is considered ready to be sampled.

TABLE 1-1. WELLS SAMPLED AND ANALYSES PERFORMED,
GROUNDWATER SAMPLING AND ANALYSIS PROGRAM,
JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Well	Date			Method		
Number 8	Sampled	8010	8020	8240	6010	7196
EW-73	01/05/89	• • • • • • • • • • • • • • • • • • • •	•••••	х	• • • • • • • • • • • • • • • • • • • •	
EW-73	02/01/89	x	X			
EW-73	03/01/89	x	X			
EW-83	01/04/89	x				
EW-83	02/02/89	x				
EW-83	03/01/89	X				
EW-84	01/10/89	X	X			
EW-84	02/02/89	X				
EW-84	03/01/89	X				
EW-85	01/04/89	X				
EW-85	02/02/89	X				
EW-85	03/01/89	x			-	
EW-86	01/04/89	X				
EW-86	02/02/89	x				
EW-86	03/01/89	X				
EW-87	01/05/89	X				X
EW-87	02/02/89	X				
EW-87	03/01/89	x				
EW-137	01/12/89	X	X		X	X
EW-137	02/02/89	X	x			
EW-137	03/01/89	x	x			
EW-140	01/12/89	x	x		X	X
EW-140	02/02/89	X	×			
EW-140	03/01/89	X	x			
EW-141	01/12/89	x	×		×	X
EW-141	02/02/89	X	x			
EW-141	03/01/89	x	×			
EW-144	01/18/89	X	X	X	X	X
EW-144	02/02/89	x	x			
EW-144	03/01/89	X	x			
MW-10	01/25/89	x	X			
MW-11	01/31/89	x	×			
MV-12	01/25/89	X	X		x	X
MV-14	01/26/89	x	x			
MV-15	01/25/89	x	x			
MM-200	01/23/89	x			x	X
MW-21D	01/23/89	X			x	X
MH-21S	01/24/89	X			x	X
MW-220	01/12/89	x			x	X
MW-230	01/09/89	x	x			
MH-240	01/13/89	X				

The letters 'S' and 'D' associated with the monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

EW = Extraction Well

MW = Monitoring Well

TABLE 1-1. (continued)

			*************		=======================================	
Well	Date	****	***	Method		
Number *	Sampled	8010	8020	8240	6010	7196
MW-250	01/24/89	x			x	x
MW-26D	01/23/89	X	X			
MW-280	01/23/89	X			X	X
MW-33\$	01/11/89	x	x		x	X
MW-41S	01/16/89	x	x		X	X
MW-44S	01/18/89	x			x	x
MW-51	01/06/89	x				
MW-52	01/18/89	X				
MW-54	01/17/89	x				
MW-55	01/06/89	x				
MW-57	01/09/89	X	x			
MW-58	01/09/89	x	x		•	
MW-59	01/05/89	X			-	
MW-60	01/13/89	X			X	
MW-61	01/20/89	x			x	
MW-62	01/11/89	x			X	
MW-63	01/19/89	x				
MW-64	01/24/89	X				
MW-70	01/05/89	X				
MW-71	01/30/89	X			X	X
MW-72	01/06/89	X				
MW - 75	01/25/89	X	X		x	
MW-88	01/17/89	X				
MW-89	01/16/89	X	x			
MW-90	01/16/89	X			x	
MW-91	01/13/89	X	x		x	
MW-92	01/17/89	X				
MW-104	01/20/89	X				
MV-105	01/17/89	X			x	X
MW-114	01/20/89	X				
MU-115	01/16/89	x			x	x
MV-120	01/10/89	X			x	
MV-121	01/13/89	x			x	
MW-122	01/10/89	x				
MV-128	01/12/89	x	x		x	
MV-129	01/12/89	X			X	
MW-130	01/12/89	×			X	X
MV-131	01/12/89	X			X	
MV-132	01/16/89	x			•••	
MW-133	01/19/89	x			x	x
MW-134	01/16/89	x			x	x
MW-135	01/16/89	x			x	x
rm: 133	01/10/07	^			*	X

The letters 'S' and 'D' associated with the monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

EW = Extraction Well

MW = Monitoring Well

TABLE 1-1. (continued)

Well	Date			Method		
Number ^a	Sampled	8010	8020	8240	6010	7196
₩·136	01/26/89	Х	************		X	
₩-138	01/12/89	x			x	
W-139	01/16/89	x			x	x
W-142	01/18/89	x			X	x
W-143	01/18/89	x			x	x
W-1000	01/09/89	x				
₩-1001	01/17/89	x				
W-1002	01/13/89	X				
W-1003	01/17/89	x				
₩-1004	01/17/89	x			X	
W -1005	01/13/89	x				
W-1013	01/18/89	X			_ X	
W-1014	01/24/89	X			X	
W-1015	01/10/89	x				
W-1016	01/11/89	X			X	
W-1019	01/18/89	X			X	x
W-1020	01/18/89	x			X	
W-1021	01/19/89	x	X			
W-1022	01/19/89	X				
W-1023	01/11/89	X				
W-1024	01/10/89	x				
W-1025	01/10/89	X				
W-1037	01/11/89	X				
W-1038	01/11/89	x				
W-1039	01/11/89	x				

The letters 'S' and 'D' associated with the monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

EW = Extraction Well

MW = Monitoring Well



TABLE 1-2. SUPPLARY OF RESULTS FOR U.S. EPA METHOD SWBOIG, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, MCCLELLAN AFB

ON-BASE MONITORING AND EXTRACTION WELLS

	Area A and Adjacent On-Base Areas		Area C and Adjacent On-Base Areas	Area D and Adjacent On-Base Areas	Other On-Base Areas	Totals
Total Wells Sampled	e e	 	28	27	1	67
Wells - Nothing Detected	o	4	,	٥	0	17
Wells Containing Analytes Below DHS Action Levels and/or U.S. EPA PMCLs	2	0	œ	ω	rd .	19
Wells Containing Analytes Above DHS Action Levels and/or U.S. EPA PMCLs	M4-26D	MV-41S,MW-63,MW-120, MW-132	EW-137, EW-140, EW-141, EW-144, MW-33S, MW-61, MW-75, MW-128, MW-129, MW-131, MW-135, MW-136, MW-139	EW-73, EW-83, EW-84, EW-85, EW-86, EW-87, MW-10, MW-11, MW-12, MW-14, MW-15, MW-72, MW-89		31

TABLE 1-2. (continued)

OFF-BASE MONITORING WELLS

	Northeast Area		West Area	Southwest Area	Southeast Area
Total Wells Sampled	0	9	0		Ý
Wells - Nothing Detected	0	2	0	٧٦	9
Wells Containing Analytes Below DHS Action Levels and/or U.S. EPA PMCLs	o	64	0	2	o
Wells Containing Analytes Above DHS Action Levels		MW-1004, MW-1005		MW-1021, MW-1022	

13

21

Totals

and/or U.S. EPA PMCLs

TABLE 1-3. SUMMARY RESULTS FOR OTHER ANALYSES, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

ON- AND OFF-BASE MONITORING AND EXTRACTION WELLS

			Priority Pollutant	
U.S. EPA Method	Volatile Aromatic Compounds 8020	Purgeable Organic Compounds 8240	Metals and Other Inorganic Compounds 6010	Chromium VI 7196
Total Wells Sampled	22	2	43	26
Wells - Mothing Detected	19	o	0	21
Wells Containing Analytes Below DHS Action Levels a Or Below U.S. EPA	1	0	41	'n
Primary MCLs b				
Wells Containing Analytes Above DHS Action Levels a Or Above U.S. EPA Primary MCLs b	EW-73, MW-10	EW-73, EW-144	MW-44S, MW-139	

Methods 8020, 8240b Methods 6010, 7196

The results of field data collected during January through March 1989 are discussed in the following subsections.

1.1.1 Groundwater Levels

The results of water level measurements in January 1989 are presented in Table 1-4. These water-level data were used to generate potentiometric surface maps for three of the four monitoring zones currently used at McClellan AFB. The four current monitoring zones are the shallow monitoring zone (above -55 feet mean sea level [msl]), middle monitoring zone (between -55 and -100 feet msl), deep "A" monitoring zone (between -100 and 150 feet msl) and deep "B" monitoring zone (below -150 feet msl). A potentiometric map was not produced for the deep "B" monitoring zone because there are only four monitoring wells screened in this zone.

Based on the evaluation of the potentiometric surface maps for the three monitoring zones (Plates 2-6), there have not been significant changes in flow directions since the last sampling period. The effects of the Area C and Area D extraction systems on groundwater flow directions are discussed in Section 2.0.

1.1.2 Field Parameters

Results of pH, conductivity, and temperature measurements taken during the January through March sampling period are presented in Table 1-5.

1.2 Analytical Results

Samples collected from monitoring and extraction wells during this sampling period were analyzed using SW-846 methods 8010, 8020, 8240, 6010 and 7196. Samples from 36 wells contained contaminants at concentrations above DHS Action Levels and/or U.S. Primary Maximum Contaminant Levels, as shown in Table 1-6. Although this is the same number of wells containing concentrations above drinking water standards as the previous samping period, some of the wells are different as summarized below:

TABLE 1-4. MONTHLY GROUNDWATER-LEVEL DATA,
GROUNDWATER SAMPLING AND ANALYSIS PROGRAM,
JANUARY THROUGH MARCH 1989, McCLELLAN AFB

***********	**************	2222242323882322222#####################	
Monitoring		Groundwater-Level Elevati	ion (feet above mean sea level)
Well		Current Measurement	····· Previous Measurement
Number ⁸	Area	01/03/89 - 01/05/89	09/29/88 - 09/30/88
	nitoring Wells:		
MW-10	D	-34.17	-34.79
MV-11	D	-33.57	-33.85
MW-12	D	-33.84	<i>-</i> 34.16
MW-14	D	-34.05	·35.32
MW-15	D	-33.71	·34.78
MW-16D	OT	-29.42	·32.07
MW-185	OT	-31.05	-30.88
MW-21S	С	-33.28	·32.50
MW-31S	OT	NM D	-31.85
MW-33\$	С	-35.04	-34.67
MW-36S	С	-31.91	-31.80
MW-41S	В	-38.58	-38.89
MW-44S	С	-32.57	-32.08
MW-49S	OT	-29.87	-33.80
MW-60	C	-33.00	·32.44
MW-61	С	-35.59	-35.01
MW-62	С	-32.81	-32.68
MW-67	A	-32.10	-33.78
MW-68	A	-35.35	-36.53
MW-88	D	-32.62	-33.08
MW-89	D	-33.47	-34.05
MW-90	D	-33.45	·34.54
MW-91	D	-33.02	-33.93
MW-92	D	-33.19	-33.58
MW-101	OT	-29.32	-35.44
MW-102	OT	-27.62	-28.03
MW-106	OT	-30.17	-30.41
MW-107	С	-31.14	-31.28
MW-110	С	-30.09	-30.10
MW-111	С	NM C	-31.72
MW-114	С	-33.66	-33.29
MW-116	OT	-35.82	-35.21
MW-120	8	-36.25	-36.78
MW-128	С	-35.36	-35.08
MW-131	С	-36.12	-35.59
MV-139	С	-37.03	-36.81
MW-1002	NU	-32.37	-32.76
MW-1004	NW	-31.87	-32.57
	. 		**.*.

a The letters 'S' and 'D' associated with monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

b Well is dry.

c No access to well.

NM = Not measured

OT = Other On-Base Areas

NE = Northeast area

NW = Northwest area

SE = Southeast area

SW = Southwest area

W = West area

Table 1-4. (Continued)

	*********	*************************	=======================================
Monitoring		Groundwater-Level Elevat	ion (feet above mean sea level)
Well		Current Measurement	Previous Measurement
Number "	Area	01/03/89 - 01/05/89	09/29/88 - 09/30/88
	• • • • • • • • • • • • • • • • • • • •		•••••
Shallow Zone M	<u>lonitoring Wells:</u>		
MW-1005	NV	-31.80	·32.96
MW-1009	NV	-30.70	-29.76
MW-1011	SM	-38.44	-37.90
MW-1012	NT	-23.36	-24.41
MW-1013	SE	-40.14	-40.51
MW-1014	SE	-37.05	-36.53
MW-1016	SW	-41.96	-43.05
MW-1017	V	-32.51	-31.96
MW-1018	W	-32.25	-30.63
MW-1019	NW	-29.37	-28.70
MW-1020	SW	-41.66	·42.45
MW-1021	SW	-42.46	-42.93
MW-1023	SW	-43.21	-42.70
MW-1026	NU	-31.46	-31.89
MW-1029	NW	-30.47	·30.25
MW-1033	W	-34.23	·33.97
MW-1036	W	-28.97	-28.20
MW-1037	SE	-27.98	-29.20
MW-1041	NU	-31.10	·32.20
Middle Zone Mo	nitoring Wells:		
MW-17D	TO	-32.44	·33.33
MW-18D	ОТ	-31.20	-32.70
MW-19D	D	-32.74	-33.75
MW-20D	С	-34.11	-34.63
MW-21D	С	-33.95	·33.65
MW-230	В	-40.34	-47.46
MW-24D	ОТ	-45.57	-44.46
MW-250	A	-36.22	-35.70
MW-260	A	-35.81	NM p
MW-27D	A	-33.41	-37.93
MW-280	SE	-33.01	-34.21
MW-29D	ОТ	-30.69	-34.36
MW-52	D	-32.64	·33.74
MW-54	D	-33.62	-33.90
MW-55	D	-34.42	-35.12
MU-57	D	-33.39	-35.01
MW-69	A	-39.66	-40.98
MW-70	D	-33.19	-33.76

a The letters 'S' and 'D' associated with monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

b Monitoring well was added to network in January, 1989.

NM = Not measured

OT = Other On-Base Areas

NE = Northeast area

NW = Northwest area

SE = Southeast area

SW = Southwest area

W = West area

Table 1-4. (Continued)

=======================================			
Monitoring		Groundwater-Level Elevation	on (feet above mean sea level)
Well		Current Measurement	Previous Measurement
Number **	Area	01/03/89 - 01/05/89	09/29/88 - 09/30/88
		• • • • • • • • • • • • • • • • • • • •	
	nitoring Wells:		#
MW-71	A	-32.42	-36.92
MU-72	0	-34.25	-34.84
MW-74	NW	-34.46	-35.16
MW-75	С	-35.06	-34.54
MW-76	NV	-34.21	-34.73
MW-100	ОТ	-29.46	-36.11
MW-103	OT	-28.55	-33.27
MW-108	С	-32.24	-32.63
MW-113	С	NM b	-32.16
MW-115	С	-34.97	-34.57
MW-121	8	-38.58	-39. <i>7</i> 3
MW-129	С	-35.81	-35.58
MW-135	С	-38.10	-38.17
MW-1000	SW	-41.53	-42.33
MW-1003	NW	-31.86	-32.59
MW-1010	NU	-31.47	-33.12
MW-1015	SW	-42.02	-43.26
MW-1022	SW	-47.51	NM C
MW-1024	SW	-43.63	-43.13
MW-1027	NU	-31. <i>9</i> 6	-32.90
MW-1030	NW	-30.85	-30.65
MW-1032	u	·31.72	·31.25
MW-1034	W	NM C	-34.34
MW-1038	SE	-35.36	-43.23
MW-1042	NW	-31.32	-32.43
Deep "A" Zone F	fonitoring Wells:		
MW-22D	С	-37.14	-37.63
MW-51	D	-32.85	-33.87
MW-58	D	-32.73	-33.67
MW-59	D	-32.70	·33.71
MU-63	R	·41.26	-44.63
MW-64	В	-44.62	NM d
MW-66	В	-50.19	-50.91
MW-104	D	-31.92	-33.32
MW-105	D	-33.51	-33.94
MW-109	C	-32.86	-32.87
MW-112	C	NW P	-32.43
MW-122	B	-42.05	-42.27
***************************************	•	76.03	76.61

a The letters 'S' and 'D' associated with monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

b No access to well.

c Access hole blocked.

d Monitoring well was added to network in January, 1989.

NM = Not measured

OT = Other On-Base Areas

NE = Northeast area

NW = Northwest area

SE = Southeast area

SW = Southwest area

W = West area

Table 1-4. (Continued)

Monitoring			ion (feet above mean sea level)
Well		Current Measurement	Previous Measurement
Number "	Area	01/03/89 - 01/05/89	09/29/88 - 09/30/88
eep "A" Zone H	onitoring Wells:		
MV-130	С	-37.77	-38.42
MU-134	C	-38.23	-39.10
NW-142	C	-37.76	-38.34
MW-143	С	-36.55	-37.20
4-1001	NW	-31.80	-32.69
MW-1025	SW	-45.32	-46.29
MW-1028	NW	-31.55	-33.32
MW-1031	NW	-27.79	-31.08
MW-1035	W	NW p	-34.94
MW-1039	SE	-35.48	-43.82
MW-1040	NT	-28.75	-38.55
MW-1043	NU	-31.29	-32.62
eep "B" Zone M	onitoring Wells:		
MW-132	В	-43.94	-46.68
MW-133	C	-38.92	-40.81
MW-136	С	-37.80	-39.12
MW-138	С	-36.97	-39.00
xtraction Well	<u>s:</u>		
EW-73	D	-42.98	NM ^C
EW-83	D	-36.84	NM C
EW-84	D	-39.02	NM C
EW-85	D	-34.79	-42.96
EW-86	D	-35.24	-41.84
EW-87	D	-33.87	·37.83

a The letters '\$' and 'D' associated with monitoring well numbers are part of the well identification notation and do not refer to monitoring zones at McClellan AFB.

OT = Other On-Base Areas

NE = Northeast area

NW = Northwest area

SE = Southeast area

SW = Southwest area

W = West area

b Access hole blocked.

c Sounding tube blocked with unknown obstruction.

NM = Not measured

TABLE 1-5. RESULTS OF FIELD MEASUREMENTS (pH, CONDUCTIVITY, AND TEMPERATURE), GROUNDWATER SAMPLING AND ANALYSIS PROCRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Adja	Area A and Adjacent On-Base Areas	and Nase Are	2	₹ PV	Area B and acent On-Base Areas	Base Ar	553	PV	Area C and acent On-Base	Area C and Adlacent On-Base Areas	ş	₽V	Area D and Adjacent On-Base Areas	Area D and nt On-Base A	7625		8	Other On-Base Areas	
			-				!									-			
Mumber	Neil pH Cond. Number -log[+H] u mhos	Cond.	o U	Well lumber	PH -log[+H]	Cond.	C C	Well pH Number -log[+H]	pH log[+H]	Cond.	C C	Well Number	Well pH Cond. Number-log[+H] u mhos	Cond.	i U	Well Number	Well pH Cond. Number-log(+H) umhos	Cond. u mhos	i U
Shallow	Shallow Zone Monitoring Wells	itoring	¥e113		1			1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 9 1 1 1 1 1 1	:	 		! ! !			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
					7.1	250.0	20	MW-21S	5.3	230.0	18	MW-10	6.9	950.0	20				
				₩-120	8.2	220.0	18	MH-33S	8.9	770.0	17	MW-11	6.3	0.009	19				
								MM-44S	7.2	270.0	18	M-12	7.7	250.0	20				
								MM-60	7.1	170.0	18	MW-14	7.0	340.0	70				
								MW-61	7.1	210.0	19	MW-15	7.3	210.0	18				
								MW-62	7.3	280.0	18	MM-88	7.2	190.0	18				
								MW-114	7.0	240.0	18	MM-89	7.4	160.0	18				
								MW-128	8.9	550.0	19	06-MH	4.9	140.0	18				
								MW-131	7.2	215.0	18	MM-91	7.4	250.0	18				
								MW-139	7.1	0.049	19	MM-92	8.1	190.0	19				
Middle	Middle Zone Monitoring Wells	toring	Jel1s	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1													!	-	
M-25D	8.9	350.0	17	M-23D	7.4	200.0	19	MW-20D	7.0	240.0	19	MW-52	4.8	200.0	19	MW-24D	9.9	210.0	18
M-26D	7.1	240.0	19	MW-121	8.9	340.0	18	MW-21D	7.1	250.0	18	MW-54	7.2	230.0	18				
E -71	7.0	140.0	19					MW-75	7.1	140.0	19	MW-55	7.7	170.0	19				
								FW-115	7.3	240.0	18	MW-57	7.4	200.0	19				
								MW-129	6.9	240.0	19	MH-70	7.5	210.0	18				
								MW-135	8.0	210.0	13	MW-72	7.1	0.044	18				
Deep 'A	Deep 'A' Zone Monitoring Wells	nitorin	Wells			! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !	1 1 1 1 1 1 1 1 1	!	, , , , , ,	! ! ! !		!	: 1 : ! !	! ! !	i ! !	! ! !	 		
				MW-63		310.0	19	MW-22D	7.5	205.0	18	MW-51	8.0	190.0	19				
				MW-64	7.4	220.0	19	MW-130	7.1	400.0	19	MM-58	7.4	230.0	18				
				MW-122		210.0	18	MW-134	7.5	240.0	19	MM-59	7.4	230.0	18				
								MW-142	7.3	230.0	19	MW-104	8.0	260.0	19				
								MW-143	7.2	250.0	19	MM-105	9.7	270.0	18				
Deep 'B	Deep 'B' Zone Monitoring Wells	nitoring	Wells	 	: : : : :	! ! !		! ! ! !		! ! !		1	: : : : : :	 			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
				MW-132	7.1	290.0	18	MW-133	7.5	270.0	70								
								MW-136	7.0	350.0	18								
								MW-138	8 .0	260.0	18		_						
					11111111								,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		11111		1111111		

NM = Not measured

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Area B and Area C and Area D and Other Jacent On-Base Areas On-Base Areas On-Base Areas	Well pH Cond. Temp. Number -log[+H] u mhos °C Number -log[+H] u mhos °C Number -log[+H] u mhos °C	
8	рН : -log[+H]	
	Well Number	
	i o	; 1 6 1
D and n-Base A	Cond.	† † † † †
Area jacent 0	рВ -1.0g [+H]	1 1 1 1 1 1 1
PV	Well Number	
	T o	
Area C and Adjacent On-Base Areas	Cond. u mhos	
Area Jacent Or	pH -log[+H]	one)
Vq	Well Number	in the deep 'A' monitoring zone) in more than one monitoring zone)
	g မြို့ပ	monit
Area B and int On-Base A	Cond. u mbos	deep 'A'
Area B and Adjacent On-Base Areas	PH -10g[+H]	I in the
Area A and Adjacent On-Base Areas Adj.	Well pH Cond. Temp. Well Number -log[+H] u mhos °C Number -	Extraction Wells (Area C Extraction Wells are screened (Area D Extraction Wells are screened
	1 0	ls are
and Base Ar	Cond.	100 Well
Area A and Adjacent On-Base Areas	-10g [+H]	Extraction Wells (Area C Extraction (Area D Extraction)
*CP4	Well Number	Extract (Area C (Area D

January:

19 19 20 19 18
750.0 220.0 830.0 210.0 220.0
6.7 2.7 2.7 4.7 4.7
EW-73 EW-83 EW-84 EW-85 EW-86
18 18 19
480.0 360.0 440.0 330.0
7.2 7.3 7.2 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1
EW-137 EW-140 EW-141 EW-144

MM - Not measured

	Southeast Area	It Area		Southeast Area	Southwest Area	it Ass.			West Area				Northwest Area	t Area			Mortheast Area	7	
Well Fumber	-10g (+H)	Mell pH Cond. Number -log[+H] u mhos	, o	Well PE Cond. Temp. Well Number -log[+E] u mhos °C Number -	рЕ -log[+H]	pH Cond.	i o	Well	Temp. Well pH Cond. C Number -log[+H] u mhos	Cond.	i o	Well pH Cond. Number -log[+H] u mhos	pff -log[+B]	Cond.	. O	Well Number	Well pH Cond.	Cond.	of C
Shallow	Zone Mc	Shallow Zone Monitoring Wells	¥e11s	Wells		* 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1													,
M-1013	7.0	280.0	18	MM-1013 7.0 280.0 18 MM-1016	7.8	300.0	19					1000		6	;				
MA-1014	6.3	200.0	19	HW-1020	60	210.0	50					7007 M		220.0	7				
M-1037	9.9	340.0	18	1001-100		320.0	2					POOT-ME		210.0	19				
			}		•	250.0						M-1005		290.0	17				
				FW-1023	o. `	220.0	18					MW-1019	7.7	500.0	19				
Middle	DOM POS	teoring	Wells		 	! !	, ! !	-		-	!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!							1 1 1 1 1 1 1	
MI-28D	6.9	200.0	13	M4-1000		230.0	8							0	;				
M-1038	7.4	M4-1038 7.4 260.0 18	18	MW-1015	7.2	220.0	19					C.B C001-MM	o.	700.0	19				
				MM-1022		210.0	19												
	1			MW-1024		220.0	18												
Deep 'A	Zone H	onttoring	Hell.		! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	:			1									-
MM-1039 7.3 260.0 18 MM-1025	7.3	260.0	18	MW-1025	6.9	210.0	18					MW-1001 9.0	9.0	200.0	19				
Deep .B	Y sooz	Deep 'B' Zone Manitoring Wells	F Vell	ed et	1	1							-	1	-				;
					**************************************	THE STREET		BEREFARE	Charles of the second	Carrier and Carrie									

TABLE 1-6. WELLS CONTAINING ANALYTES AT CONCENTRATIONS EXCEEDING STATE AND FEDERAL DRINKING WATER STANDARDS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis		Concentration	DHS Action Level	U.S. EPA Primary MCL
EW-73	01/05/89	D	8240	Vinyt chloride		SAC	2100	2	1
				1,1-Dichloroethene		SAC	9900	6	7
				1,1-Dichloroethane		SAC	800	20	NE
				Total 1,2-Dichloroethene		SAC	1100	16	NE
				1,1,1-Trichloroethane		SAC	810	200	200
				Trichloroethene		SAC	1300	5	5
EW-73	02/01/89	D	8010	Vinyl chloride		SAC	1500P	2	1
				Methylene chloride		SAC	1300P	40	NE
				1,1-Dichloroethene		SAC	7000P	6	7
				1,1-Dichloroethane		SAC	800P	20	NE
				Total 1,2-Dichloroethene		SAC	730P	16	NE
				1,1,1-Trichloroethane		SAC	790P	200	200
				Trichloroethene		SAC	1100P	5	5
EW-73	03/01/89	D	8010	Vinyl chloride		SAC	1000P	2	1
				1,1-Dichloroethene		SAC	5400P	6	7
				1,1-Dichloroethane		SAC	930P	20	NE
				Total 1,2-Dichloroethene		SAC	740P	16	NE
				1,1,1-Trichloroethane		SAC	930P	200	200
				Trichloroethene		SAC	690P	5	5
			8020	Toluene		SAC	220C	100	NE
EW-83	01/04/89	D	8010	1,1-Dichloroethene		SAC	390P	6	7
				Trichloroethene		SAC	41P	5	5
EW-83	02/02/89	D	8010	Methylene chloride		SAC	150C	40	NE
				1,1-Dichloroethene		SAC	650C	6	7
				Tetrachioroethene		SAC	7.8C	4	NE
EW-83	03/01/89	D	8010	1,1-Dichloroethene		SAC	410P	6	7
				Trichloroethene		SAC	42P	5	5
EW-84	01/10/89	D	8010	Vinyl chloride	FDA	SAC	410P	2	1
				Methylene chloride	FDA	SAC	40P	40	NE
				1,1-Dichloroethene	FDA	SAC	1200P	6	7
				1,1-Dichloroethane	FDA	SAC	240P	20	NE

All units are ug/l.

EW = Extraction well

NE = Not established

SAC = Radian Analytical Services, Sacramento

FDA = First part of field duplicate sample

C = Presence of analyte confirmed by second column

P or PC = Identity previously confirmed

TABLE 1-6. (continued)

*******	.=======	=====				=====			
					Field			DHS	U.S. EPA
Well	Date				Duplicate			Action	Primary
Number 	Sampled	Area	Method	Analyte Detected	Analysis	Lab	Concentration	Level	MCL
EW-84	01/10/89	D	8010	Total 1,2-Dichloroethene	FDA	SAC	230P	16	NE
				1,2-Dichloroethane	FDA	SAC	65P	1	5
				Trichloroethene	FDA	SAC	980P	5	5
				Vinyl chloride	FDB	SAC	620P	2	1
				1,1-Dichloroethene	FDB	SAC	2000P	6	7
				1,1-Dichloroethane	FDB	SAC	370P	20	NE
				Total 1,2-Dichloroethene	FDB	SAC	210P	16	NE
				1,2-Dichloroethane	FDB	SAC	56P	1	5
				1,1,1-Trichloroethane	FDB	SAC	210P	200	200
				Trichloroethene	FDB	SAC	- 1600P	5	5
EW-84	02/02/89	D	8010	Vinyl chloride		SAC	440C	2	1
				Methylene chloride		SAC	56C	40	NE
				1,1-Dichloroethene		SAC	1300C	6	7
				1,1-Dichloroethane		SAC	207C	20	NE
				Total 1,2-Dichloroethene		SAC	2200	16	NE
				1,2-Dichloroethane		SAC	120C	1	5
				Trichloroethene		SAC	1200C	5	5
EW-84	03/01/89	D	8010	Vinyl chloride		SAC	350C	2	1
				1,1-Dichloroethene		SAC	860C	6	7
				1,1-Dichloroethane		SAC	180C	20	NE
				Total 1,2-Dichloroethene		SAC	190C	16	NE
				1,2-Dichloroethane		SAC	110C	1	5
				Trichloroethene		SAC	720C	5	5
EW-85	01/04/89	D	8010	1,1-Dichloroethene		SAC	600C	6	7
				1,2-Dichloroethane		SAC	13C	1	5
				Trichloroethene		SAC	400C	5	5
EW-85	02/02/89	D	8010	Methylene chloride		SAC	92P	40	NE
	,,,	-	-	1,1-Dichloroethene		SAC		6	7
				Trichloroethene		SAC	660P	5	5
EW-85	03/01/89		8010	1,1-Dichloroethene		SAC	550P	6	7
EM-03	03/01/09	,	5010	1,1-Dichloroethane		SAC		20	, NE
				Trichloroethene		SAC		5	N C 5
				Trichtoroethene		SAU	33UY))
EW-86	01/04/89	D	8010	1,1-Dichloroethene		SAC		6	7
				Trichloroethene		SAC	42P	5	5

All units are ug/l.

SAC = Radian Analytical Services, Sacramento

EW = Extraction well

NE = Not established

FDA = First part of field duplicate sample

FDB = Second part of field duplicate sample

C = Presence of analyte confirmed by second column

P or PC = Identity previously confirmed

TABLE 1-6. (continued)

	Well Number	Date Sampled			Analyte Detected	•	Lab	Concentration	Level	U.S. EPA Primary MCL
•										
	EW-86	02/02/89	D	8010	1,1-Dichloroethene		SAC		6 5	7 5
					Trichloroethene		SAC	40P	,	,
	EW-86	03/01/89	D	8010	1,1-Dichloroethene		SAC	56P	6	7
					Trichloroethene		SAC	25P	5	5
	511.07	01 (05 (80		8010	4 4 Dicklosophone		SAC	100P	6	7
	EW-87	01/05/89	U	8010	1,1-Dichloroethene Trichloroethene		SAC		5	5
					Trichtorbethene		SAC	376	,	,
	EW-87	02/02/89	D	8010	1,1-Dichloroethene		SAC	- 140C	6	7
					Trichloroethene		SAC	58C	5	5
	EW-87	03/01/89	•	8010	1,1-Dichloroethene		SAC	100c	6	7
	EM-O!	03/01/69	U	8010	Trichloroethene		SAC		5	5
					11 ICHTOI OETHERE		JAC	300		,
	EW-137	01/12/89	С	8010	Trichloroethene		SAC	490C	5	5
	EW-137	02/02/89	С	8010	Trichloroethene		SAC	480C	5	5
	EW-137	03/01/89	С	8010	Trichloroethene		SAC	310P	5	5
	EW-140	01/12/89	С	8010	Total 1,2-Dichloroethene		SAC		16	NE
					Trichloroethene		SAC	140C	5	5
	EW-140	02/02/89	С	8010	Total 1,2-Dichloroethene		SAC	30C	16	NE
		,,			Trichloroethene		SAC		5	5
			_					25.0	4.0	
	EW-140	03/01/89	C	8010	Total 1,2-Dichloroethene		SAC		16 5	NE 5
					Trichloroethene		SAC	73 L	,	5
	EW-141	01/12/89	С	8010	Total 1,2-Dichloroethene		SAC	26C	16	NE
					Trichloroethene		SAC	230C	5	5
	Eu 4/4	02/02/02	•	9040	Tabal 4 3.Nichlosseh		640	20C	16	NE
	CW- 141	02/02/89	C	8010	Total 1,2-Dichloroethene Trichloroethene		SAC		5	NE 5
					i i i cii toi oetiiere		JAL	2100	,	,
	EW-141	03/01/89	C	8010	Trichloroethene		SAC	120P	5	5
	EW-144	01/18/89	С	8010	Trichloroethene		SAC	310C	5	5
	177	J.,,,	-		Trichloroethene		SAC		5	5

All units are ug/l.

C = Presence of analyte confirmed by second column

P or PC = Identity previously confirmed

EW = Extraction well

NE = Not established

SAC = Radian Analytical Services, Sacramento

TABLE 1-6. (continued)

Well Number	Date Sampled	Area	Method	Analyte Detected	Field Duplicate Analysis		Concentration	DHS Action Level	U.S. EPA Primary MCL
					• • • • • • • • • • • • • • • • • • • •				•••••
EW-144	02/02/89	С	8010	Trichloroethene		SAC	340c	5	5
EW-144	03/01/89	С	8010	Trichloroethene		SAC	240C	5	5
MW-10	01/25/89	D	8010	Vinyl chloride		SAC	73C	2	1
				1,1-Dichloroethene		SAC	840C	6	7
				1,1-Dichloroethane		SAC	110C	20	NE
				Total 1,2-Dichloroethene		SAC	130C	16	NE
				1,2-Dichloroethane		SAC	250C	1	5
				Trichloroethene		SAC	- 1300C	5	5
				1,2-Dichlorobenzene		SAC	140C	130	NE
			8020	1,2-Dichlorobenzene		SAC	140P	130	NE
MU-11	01/31/89	D	8010	1,1-Dichloroethene		SAC	19000C	6	7
				1,1-Dichloroethane		SAC	270C	20	NE
				Total 1,2-Dichloroethene		SAC	190C	16	NE
				1,1,1-Trichloroethane		SAC	5600C	200	200
				Trichloroethene		SAC	2900C	5	5
MW-12	01/25/89	D	8010	1,1-Dichloroethene		SAC	2600P	6	7
				1,1,1-Trichloroethane		SAC	360P	200	200
				Trichloroethene		SAC	590P	5	5
				Tetrachloroethene		SAC	38P	4	NE
MU-14	01/26/89	D	8010	1,1-Dichloroethene		SAC	4600C	6	7
				1,2-Dichloroethane		SAC	34C	1	5
				1,1,1-Trichloroethane		SAC	2300C	200	200
				Trichloroethene		SAC	4100C	5	5
MW- 15	01/25/89	D	8010	1,1-Dichloroethene		SAC	580C	6	7
				Trichloroethene		SAC	340c	5	5
MW-26D	01/23/89	A	8010	Trichloroethene		SAC	220	5	5
MW-33\$	01/11/89	C	8010	Methylene chloride		SAC	1100U	40	NE
				Total 1,2-Dichloroethene		SAC	580P	16	NE
				1,2-Dichloroethane		SAC	200P	1	5
				Trichloroethene		SAC	17000P	5	5
	01/16/89		8010	Trichloroethene		SAC	3300C	5	5

All units are ug/i.

EW = Extraction well

MW = Monitoring well

NE = Not established

SAC = Radian Analytical Services, Sacramento

C = Presence of analyte confirmed by second column

P or PC = Identity previously confirmed

U = Unconfirmed, second column not requested

TABLE 1-6. (continued)

					Field			DHS	U.S. EPA
Well	Date				Duplicate			Action	•
Number	Sampled			Analyte Detected	· ·		Concentration	Level	MCL
MW-41S	01/16/89	В	8010	Tetrachloroethene		SAC	240c	4	NE
MH-44S	01/18/89	c	6010	Chromium		SAC	55	NE	50
MW-61	01/20/89	С	8010	Trichloroethene		SAC	12C	5	5
MU-63	01/19/89	В	8010	Total 1,2-Dichloroethene	FDA	SAC	29C	16	NE
				Trichloroethene	FDA	SAC	55C	5	5
				Total 1,2-Dichloroethene	FDB	SAC	31C	16	NE
				Trichloroethene	FDB	SAC	- 59C	5	5
MW-72	01/06/89	D	8010	1,1-Dichloroethene		SAC	370P	6	7
				1,1-Dichloroethane		SAC	49P	20	NE
				Total 1,2-Dichloroethene		SAC	34P	16	NE
				1,2-Dichloroethane		SAC	130P	1	5
				Trichloroethene		SAC	550P	5	5
MW-75	01/25/89	С	8010	Trichloroethene		SAC	12 c	5	5
MW-89	01/16/89	0	8010	1,1-Dichloroethene		SAC	6.20	6	7
MW- 120	01/10/89	В	8010	Trichloroethene	FD8	SAC	5.10	5	5
MW-128	01/12/89	С	8010	Methylene chloride		SAC	800C	40	NE
				Total 1,2-Dichloroethene		SAC	190C	16	NE
				Trichloroethene		SAC	17000C	5	5
MW-129	01/12/89	С	8010	Trichloroethene	FDA	SAC	170C	5	5
				Trichloroethene	FDB	SAC	140C	5	5
MW-131	01/12/89	С	8010	Total 1,2-Dichloroethene		SAC	19P	16	NE
				Trichloroethene		SAC	90P	5	5
MW-132	01/16/89	В	8010	Total 1,2-Dichloroethene		SAC	25C	16	NE
				Trichloroethene		SAC	82C	5	5
MW-135	01/16/89	С	8010	Trichloroethene		SAC	25C	5	5
MW-136	01/26/89	С	8010	Trichloroethene		SAC	230C	5	5
ŵ. 170	01/16/89	•	8010	Total 1,2-Dichloroethene		SAC	26C	16	NE

All units are ug/l.

MW = Monitoring well

NE = Not established

SAC = Radian Analytical Services, Sacramento

FDA = First part of field duplicate sample

FDB = Second part of field duplicate sample

C = Presence of analyte confirmed by second column

P or PC = Identity previously confirmed

TABLE 1-6. (continued)

Well	Date				Field Duplicate			DHS Action	U.S. EPA Primary
Number		Area	Method	Analyte Detected	•		Concentration		MCL
MW-139	01/16/89	С	8010	1,2-Dichloroethane		SAC	1.1C	1	5
				Trichloroethene		SAC	95C	5	5
			6010	Cadmium		SAC	33	NE	10
MW-1004	01/17/89	NU	8010	1,1-Dichloroethene		SAC	7.0P	6	7
MW- 1005	01/13/89	NW	8010	1,1-Dichloroethene		SAC	200	6	7
				Trichloroethene		SAC	5.20	5	5
MW-1021	01/19/89	sw	8010	Trichloroethene		SAC	- 15C	5	5
MW-1022	01/19/89	SW	8010	Trichloroethene	FDA	SAC	9.1c	5	5
				Trichloroethene	FDB	SAC	10C	5	5

All units are ug/l.

MW = Monitoring well

NW = Northwest area

SAC = Radian Analytical Services, Sacramento

FDA = First part of field duplicate sample

FDB = Second part of field duplicate sample

C = Presence of analyte confirmed by second column

P or PC = Identity previously confirmed

SW = Southwest area

- 3 wells were not sampled this time (MW-27D, MW-74, and MW-76);
- 1 well contained contaminants below state and federal drinking water standards during this sampling period (MW-55);
- 2 wells that were not sampled last quarter contained contaminants above standards during this sampling period (MW-11 and EW-144); and
- 2 wells contained contaminants above drinking water standards during this sampling period (MW-44S and MW-89).

Both MW-44S and MW-89 have contained contaminants above drinking water standards during previous sampling rounds (Appendix A-3). Trichloroethene (TCE) concentrations were above drinking water standards in 33 of the 36 wells containing contaminants above drinking water standards. The concentrations of TCE detected in the wells sampled during this sampling period are shown for each monitoring zone on Plates 7, 8, and 9. Deep "B" zone monitoring wells are also included on Plate 9.

In general, the analytical results indicate that contaminants continue to be detected in the same wells. There have been some significant changes in contaminant concentrations in several wells. Samples from MW-55, a middle zone monitoring well located in Area D have shown significant decreases for five Method 8010 analytes. These analytes (TCE, total 1,2-dichloroethene, 1,1-dichloroethane, 1,1-dichloroethene and 1,2-dichloroethane) have been decreasing over the past several sampling events and are now below drinking water standards. Three other wells in Area D have also shown significant decreases in contaminant concentrations. These wells, NW-10, NW-12 and NW-15 are all screened in the shallow monitoring zone. In Area B, the TCE concentration in NW-41S increased from 2,900 to 3,300 ug/L. This is compared to the first quarter of 1988 when TCE concentrations were 140 ug/L. In the Southwest area, low levels (0.32 ug/L) of TCE were detected in MW-1020. Trichloroethene has been detected in this shallow zone monitoring well during one other sampling event, fourth quarter 1987.

rapian

1.2.1 Summary of QA/QC Data

The QA/QC data presented in this report have been evaluated in terms of the data quality objectives specified in Section 4.0 of the McClellan AFB Quality Assurance Project Plan (Radian, April 1989). These objectives specify performances of each method in terms of accuracy, precision and completeness. The data quality objectives for precision are a relative percent difference (RPD) of less than or equal to 50 percent for field duplicate samples, and an RPD of less than or equal to 30 percent for laboratory duplicate analyses. The objectives for accuracy are analyte-specific and are listed in each method standard operating procedure. The objective for completeness is to have greater than 90 percent of all data reported as valid. The objective for comparability and representativeness are more a function of the sampling program and can be evaluated only in terms of the objectives of the program. However, comparability is achieved by using standard methods of sampling and analysis, reporting in standard units, and using standard and comprehensive reporting formats.

There were no significant problems in overall quality control, as shown in the summary of QA/QC procedures presented in this report. A summary of the overall QC data and results is presented in Table 1-7, and Table 1-8 summarizes the qualified data. The term "qualified data" refers to data that do not meet the data quality objectives of the program. Valid data meet the data quality objectives of the program. Table 1-9 summarizes the holding times for samples prior to analyses.

More than 99 percent of the data have been validated and are unqualified; the exceptions are noted in Table 1-8. The objectives for accuracy, precision, and completeness were met. The required holding times were met. All out-of-control data were qualified as estimated. Out of a total of approximately 9,100 individually detected and non-detected analytical results, 79 detected results were qualified. The completeness objective of 90 percent valid data has been attained.

TABLE 1-7. SUMMARY OF QUALITY CONTROL RESULTS GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY - MARCH 1989

SW-846 Method	Number Performed	Compound (Number of Occurrences)	Person of Possiles
metnod	reflormed	(Number of Occurrences)	Range of Results
Reagent Blan	nks		
8010	24	N.D.	n.A.
8020	16	N.D.	N.A.
8240	2	N.D.	N.A.
6010	14	Zinc (12)	0.002 - 0.037 mg/I
		Calcium (8)	0.012 - 1.2 mg/L
		Iron (13)	0.009 - 0.07 mg/L
		Magnesium (1)	0.26 mg/L
		Sodium (6)	0.055 - 0.25 mg/L
		Silicon (3)	0.08 - 0.088 mg/L
7196	11	N.D.	N.A.
Trip Blanks		· · · · · · · · · · · · · · · · · · ·	
8010	6	Trichloroethene (1) ^a	0.22 ug/L
Ambient Blas	nks		
8010	8	Methylene Chloride (2)	1.6 - 1.7 ug/L
8020	1	N.D.	N.A.
Equipment B	lanks		
8010	6	Methylene Chloride (2)	0.42 - 0.47 ug/L
			(Continued)

N.A = Not applicable.

N.D. = Not detected.

Detected concentration did not affect field sample results. Occurrence probably due to random contamination during sample preparation or handling. Corrective action taken was notification of sampling crew.

TABLE 1-7. (Continued)

SW-846 Method	Number Performed	Compound	Range of Results (RPD %)	Acceptance Criteria (RPD %)	Results Not Meeting Criteria ^b
	te Samples		•		
8010	6	8 compounds	0 - 48	50	0
6010	5	13 Metals	0 - 165	50	6
7196	1	Chromium VI	N.C.	50	0
	Spike Dupli	cate	 -		
8010	11	3 compounds	0 - 35	30	2
8020	4	3 compounds	1 - 13	30	0
Matrix	Spike				
8010	9	1,1-Dichloroethene	58 - 97	28 - 167	0
	10	Trichlorobenzene	36 - 106	35 - 146	0
	10	Chlorobenzene	68 - 99	38 - 150	0
8020	3	Chlorobenzene	79 - 94	55 - 135	0
	3	Benzene	86 - 93	39 - 150	0
	3	Toluene	82 - 95	46 - 148	0
Analyti	cal Spikes		·		
6010	48	Thallium	79 - 142	75 - 125	6
	48	Zinc	70 - 105	75 - 125	1
	48	Barium	28 - 111	75 - 125	2
	48	Manganese	51 - 108	75 - 125	2
	28	Lead	92 - 100	75 - 125	0
	48	20 other metals ^C	79 - 116	75 - 125	0
Surroga	te Spikes	<u></u>			
8010	197	1-Bromo-4-fluorobenzene	68 - 138	40 - 140	0
8020	58	1-Bromo-4-fluorobenzene	73 - 110	40 - 140	0
8240	4	4-Bromofluorobenzene	100 - 101	94 - 117	0
		1,2-Dichloroethane	94 - 100	77 - 126	0
		Toluene - d8	99 - 100	92 - 111	0

The acceptance criteria represent the upper acceptable bound of RPD (%) for duplicates and the range in percent recovery for the spikes.

b Refers to individual analytical results, not overall sample results.

^C The other metals are silver, aluminum, arsenic, boron, beryllium, calcium, cadmium, cobalt, chromium, copper, iron, potassium, magnesium, molybdenum, sodium, nickel, antimony, selenium, silicon, and vanadium.

N.C. = Not Calculated.

TABLE 1-8. SUMMARY OF QUALIFIED DATA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY - MARCH 1989, McCLELLAN AFB

Sample Number	U.S. EPA Method		Type of Qualification	n Reason
MW-12	6010	Thallium	A	High Spike Recovery
MW-14	8010	Trichloroethene	PF	High RPD
MW-21S	6010	Thallium	A	High Spike Recovery
MW-25D	6010	Thallium	A	High Spike Recovery
		Vanadium	PF	High RPD
mw-25D-fd	6010	Thellium	A	High Spike Recovery
MW-63	8010	Trichloroethene	PL	High RPD
MW-75	6010	Thallium	A	High Spike Recovery
MW-120 &	6010	Barium	A	High Spike Recovery
120-FD		Manganese	A	High Spike Recovery
MW-1014	6010	Thallium	A	High Spike Recovery
TB-03	8010	Trichloroethene	0	Detected in Reagent Blank
AB-28D	8010	Methylene Chlori	.de O	Detected in Reagent Blank
AB-1019	8010	Methylene Chlori	.de 0	Detected in Reagent Blank
EB-10	8010	Methylene Chlori	.de 0	Detected in Reagent Blank
EB-14	8010	Methylene Chlori	.de 0	Detected in Reagent Blank
A11*	6010	Zinc and Iron	R	Detected in Reagent Blank

A = Qualified as inaccurate due to matrix spike recoveries outside the limits.

PL = Qualified as estimated due to high laboratory variability as measured by laboratory matrix spikes/matrix spike duplicates.

PF = Qualified as estimated due to high total variability as measured by field duplicates.

RPD = Relative percent difference.

R = Detected in reagent blank.

^{0 =} Detected in blank other than reagent blank

⁼ Except the following results are not qualified:

Zinc - MW-25D and 25D-FD, MW-90, MW-105, MW-120 and 120-FD, MW-130, MW-134, MW-136, and MW-1004.

Iron - MW-21S, MW-25D AND 25D-FD, MW-44S, MW-60, MW-61, MW-62, MW-71, MW-75, MW-90, MW-91, MW-105, MW-128, MW-130, MW-139, MW-1013, MW-1014, and MW-1016.

TABLE 1-9. REPORT OF HOLDING TIMES, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

*******	22222222			=====	sw8010	sw8020	sw8240	6010	7196
		U.S.EPA MET			14 DAYS	14 DAYS	14 DAYS	6 MONTHS	24 HOURS
		MAXIMUM NUI	CDING LIME		14 UATS	14 DATS	14 DATS	O MONTHS	24 HOURS
	DATE	FIELD	LAB		DATE	DATE	DATE	DATE	DATE
WELL	SAMPLED	ANALYSIS	ANALYSIS	LA8	ANALYZED	ANALYZED	ANALYZED	ANALYZED	ANALYZED
									•••••
EW-73	01/05/89			SAC			01/14/89		
EW-73	02/01/89			SAC	02/03/89	02/03/89			
EW-73	03/01/89			SAC	03/03/89	03/06/89			
EW-73	03/01/89		MS	SAC	03/03/89	03/06/89			
EW-73	03/01/89		MSD	SAC	03/03/89	03/06/89			
EW-83	01/04/89			SAC	01/11/89				
EW-83	02/02/89			SAC	02/03/89				
EW-83	03/01/89			SAC	03/03/89		-		
EW-84	01/10/89	FDA		SAC	01/12/89	01/12/89			
EW-84	01/10/89	FDB		SAC	01/12/89	01/12/89			
EW-84	02/02/89			SAC	02/03/89				
EW-84	03/01/89			SAC	03/03/89				
EW-85	01/04/89			SAC	01/11/89				
EW-85	02/02/89			SAC	02/03/89				
EW-85	03/01/89			SAC	03/03/89				
EW-86	01/04/89			SAC	01/11/89				
EW-86	02/02/89			SAC	02/03/89				
EW-86	03/01/89			SAC	03/03/89				
EW-87	01/05/89			SAC	01/11/89				01/06/89
EW-87	02/02/89			SAC	02/03/89				
EW-87	03/01/89			SAC	03/03/89				
EW-137	01/12/89			SAC	01/17/89	01/17/89		01/25/89	01/13/89
EW-137	01/12/89		AS	SAC				01/25/89	
EW-137	02/02/89			SAC	02/03/89	02/03/89			
EW-137	03/01/89			SAC	03/03/89	03/03/89			
EW-140	01/12/89			SAC	01/17/89	01/17/89		01/25/89	01/13/89
EW-140	01/12/89		AS	SAC				01/25/89	
EW-140	02/02/89			SAC	02/03/89	02/03/89			
EW-140	03/01/89			SAC	03/03/89	03/03/89			
EW-141	01/12/89			SAC	01/17/89	01/17/89		01/25/89	01/13/89
EW-141	01/12/89		AS	SAC				01/25/89	
EW-141	02/02/89			SAC	02/03/89	02/03/89			
EW-141	03/01/89			SAC	03/03/89	03/03/89			
EW-144	01/18/89			SAC	01/23/89	01/23/89	01/24/89	01/27/89	01/19/89
EW-144	01/18/89		AS	SAC				01/27/89	
EW-144	02/02/89			SAC	02/03/89	02/03/89			
EW-144	03/01/89			SAC	03/03/89	03/03/89			
		• • • • • • • • • • • • • • • • • • • •							

EW = Extraction Well

FDA = First field duplicate analysis

FDB = Second field duplicate analysis

SAC = Radian Analytical Services, Sacramento

MS ≖ Matrix spike

MSD = Matrix spike duplicate

TABLE 1-9. (continued)

		U.S.EPA MET			SW8010	SW8020	SW8240	6010	7196
		MAXIMUM HO	LDING TIME		14 DAYS	14 DAYS	14 DAYS	6 MONTHS	24 HOURS
	DATE	FIELD	LAB		DATE	DATE	DATE	DATE	DATE
ÆLL	SAMPLED	ANALYSIS	ANALYSIS	LAB	ANALYZED	ANALYZED	ANALYZED	ANALYZED	ANALYZED
rw-10	01/25/89		• • • • • • • • • •	SAC	01/30/89	01/30/89	•••••••		•••••
N-10	01/25/89		MS	SAC	01/30/89	01/30/89			
f⊌-10	01/25/89		MSD	SAC	01/30/89	01/30/89			
W-11	01/31/89			SAC	02/02/89	02/02/89			
W-11	01/31/89		MS	SAC	02/02/89	02/02/89			
W-11	01/31/89		MSD	SAC	02/02/89	02/02/89			
W-12	01/25/89			SAC	01/30/89	01/30/89		02/08/89	01/26/89
W-12	01/25/89		AS	SAC				02/08/89	
W-14	01/26/89			SAC	01/31/89	01/31/89	-		
₩-14	01/26/89		MS	SAC	01/31/89	01/31/89			
W-14	01/26/89		MSD	SAC	01/31/89	01/31/89			
M-15	01/25/89			SAC	01/30/89	01/30/89			
₩-20D	01/23/89			SAC	01/27/89			02/03/89	01/23/89
W-200	01/23/89		AS	SAC				02/03/89	
W-210	01/23/89			SAC	01/27/89			02/03/89	01/23/89
W-21D	01/23/89		AS	SAC				02/03/89	
W-21S	01/24/89			SAC	01/30/89			02/08/89	01/25/89
W-21S	01/24/89		AS	SAC				02/08/89	
M-22D	01/12/89			SAC	01/20/89			01/25/89	01/13/89
W-22D	01/12/89		AS	SAC				01/25/89	
M-230	01/09/89			SAC	01/12/89	01/12/89			
W-24D	01/13/89			SAC	01/19/89				
₩-25D	01/24/89	FDA		SAC	01/30/89			02/08/89	01/25/89
M-25D	01/24/89	FDA	AS	SAC				02/08/89	
W-25D	01/24/89	FDB		SAC	01/30/89			02/08/89	01/25/89
W-25D	01/24/89	FDB	AS	SAC				02/08/89	
W-26D	01/23/89			SAC	01/26/89	01/26/89			
W-26D	01/23/89		MS	SAC	01/26/89				
W-260	01/23/89		MSD	SAC	01/26/89				
W-28D	01/23/89			SAC	01/30/89			02/03/89	01/23/89
W-280	01/23/89		AS	SAC				02/03/89	
W-280	01/23/89		MS	SAC	01/27/89				
N-28D	01/23/89		MSD	SAC	01/27/89				
₩-33s	01/11/89			SAC	01/17/89	01/17/89		01/23/89	01/12/89
W-33s	01/11/89		AS	SAC				01/23/89	
W-415	01/16/89			SAC	01/24/89	01/24/89		02/03/89	01/17/89
W-41S	01/16/89		AS	SAC				02/03/89	
N-445	01/18/89			SAC	01/31/89			01/27/89	01/19/89

MW = Monitoring Well

FDA = First field duplicate analysis

FDB = Second field duplicate analysis

SAC = Radian Analytical Services, Sacramento

MS = Matrix spike

MSD = Matrix spike duplicate

TABLE 1-9. (continued)

		U.S.EPA MET			SW8010 14 Days	SW8020 14 Days	SW8240 14 Days	6010 6 MONTHS	7196 24 HOURS
•••••	DATE	FIELD	LAB		DATE	DATE	DATE	DATE	DATE
ELL	SAMPLED	ANALYSIS	ANALYSIS	LAB	ANALYZED	ANALYZED	ANALYZED	ANALYZED	ANALYZED
W-44S	01/18/89		AS	SAC				01/27/89	
W-51	01/06/89			SAC	01/11/89				
W-52	01/18/89			SAC	01/31/89				
W-54	01/17/89			SAC	01/20/89				
W-55	01/06/89			SAC	01/11/89				
W-57	01/09/89			SAC	01/11/89	01/11/89			
₩-58	01/09/89			SAC	01/11/89	01/11/89			
W-59	01/05/89			SAC	01/11/89				
M-60	01/13/89			SAC	01/19/89		_	01/23/89	
W-60	01/13/89		AS	SAC			-	01/23/89	
W-61	01/20/89			SAC	01/27/89			02/03/89	
W-61	01/20/89		AS	SAC				02/03/89	
W-62	01/11/89			SAC	01/13/89			01/23/89	
W-62	01/11/89		AS	SAC				01/23/89	
W-63	01/19/89	FDA		SAC	01/30/89				
N-63	01/19/89	FDB		SAC	01/30/89				
N-63	01/19/89	FDB	MS	SAC	01/23/89				
W-63	01/19/89	FD B	MSD	SAC	01/23/89				
W-64	01/24/89			SAC	01/30/89				
W-64	01/24/89		MS	SAC	01/30/89				
W-64	01/24/89		MSD	SAC	01/30/89				
₩-70	01/05/89			SAC	01/11/89				
₩-71	01/30/89			SAC	01/31/89			02/16/89	01/31/89
W-71	01/30/89		AS	SAC				02/16/89	
W-72	01/06/89			SAC	01/11/89				
N-75	01/25/89			SAC	01/30/89	01/30/89		02/08/89	
W-75	01/25/89		AS	SAC				02/08/89	
M-88	01/17/89			SAC	01/20/89				
W-89	01/16/89			SAC	01/20/89	01/20/89			
W-90	01/16/89			SAC	01/20/89			02/03/89	
W-90	01/16/89		AS	SAC				02/03/89	
W-91	01/13/89			SAC	01/19/89	01/19/89		01/23/89	
N-91	01/13/89		AS	SAC				01/23/89	
W-92	01/17/89			SAC	01/20/89				
W-104	01/20/89			SAC	01/27/89				
W-104	01/20/89		MS	SAC	01/27/89				
W-104	01/20/89		MSD	SAC	01/27/89				
₩-105	01/17/89			SAC	01/20/89			02/06/89	01/18/89

HW = Monitoring Well

FDA = First field duplicate analysis

FDB = Second field duplicate analysis

SAC = Radian Analytical Services, Sacramento

MS = Matrix spike

MSD = Matrix spike duplicate

TABLE 1-9. (continued)

		U.S.EPA ME'			SW8010 14 DAYS	SW8020 14 Days	SW8240 14 DAYS	6010 6 MONTHS	7196 24 HOURS
. . .						14 DATS	I4 DAIS	o munins	24 HOOKS
	DATE	FIELD	LAB		DATE	DATE	DATE	DATE	DATE
ÆLL	SAMPLED	ANALYSIS	ANALYSIS	LAB	ANALYZED	ANALYZED	ANALYZED	ANALYZED	ANALYZED
w-105	01/17/89		AS	SAC		••••••		02/06/89	
W-114	01/20/89			SAC	01/27/89			•	
W-115	01/16/89			SAC	01/20/89			02/03/89	01/17/89
W-115	01/16/89		AS	SAC				02/03/89	
W-120	01/10/89	FDA		SAC	01/17/89			01/23/89	
₩-120	01/10/89	FDA	AS	SAC				01/23/89	
W-120	01/10/89	FDB		SAC	01/17/89			01/23/89	
W-120	01/10/89	FDB	AS	SAC				01/23/89	
W-121	01/13/89			SAC	01/19/89		-	01/23/89	
W-121	01/13/89		AS	SAC				01/23/89	
W-122	01/10/89			SAC	01/12/89				
MW-128	01/12/89			SAC	01/17/89	01/17/89		01/25/89	
4W-128	01/12/89		AS	SAC				01/25/89	
MW-129	01/12/89	FDA		SAC	01/23/89			01/25/89	
MW-129	01/12/89	FDA	AS	SAC				01/25/89	
W-129	01/12/89	FDB		SAC	01/20/89			01/25/89	
W-129	01/12/89	FDB	AS	SAC				01/25/89	
MW-130	01/12/89			SAC	01/19/89			01/25/89	01/13/89
W-130	01/12/89		AS	SAC				01/25/89	
MW-130	01/12/89		MS	SAC	01/25/89				
W-130	01/12/89		MSD	SAC	01/25/89				
W-131	01/12/89			SAC	01/19/89			01/25/89	
W-131	01/12/89		AS	SAC				01/25/89	
W-132	01/16/89			SAC	01/20/89				
MW-133	01/19/89	FDA		SAC	01/23/89			02/02/89	01/20/89
MW-133	01/19/89	FDA	AS	SAC				02/02/89	
W-133	01/19/89	FDB		SAC	01/23/89			02/02/89	01/20/89
HW-133	01/19/89	FDB	AS	SAC				02/02/89	
MV-134	01/16/89			SAC	01/20/89			02/03/89	01/17/89
MW-134	01/16/89		AS	SAC				02/03/89	
W-135	01/16/89			SAC	01/20/89			02/03/89	01/17/89
W- 135	01/16/89		AS	SAC				02/03/89	
W-136	01/26/89			SAC	01/31/89			02/16/89	
W-136	01/26/89		AS	SAC				02/16/89	
W-138	01/12/89	FDA		SAC	01/20/89			01/25/89	
W-138	01/12/89	FDA	AS	SAC				01/25/89	
W-138	01/12/89	FDB		SAC	01/20/89			01/25/89	
W-138	01/12/89	FDB	AS	SAC				01/25/89	

MW = Monitoring Well

FDA = First field duplicate analysis

FDB = Second field duplicate analysis

SAC = Radian Analytical Services, Sacramento

MS = Matrix spike

MSD = Matrix spike duplicate

TABLE 1.9. (continued)

		MAXIMUM HO			SW8010 14 Days	SW8020 14 Days	SW8240 14 Days	6010 6 Months	7196 24 HOURS
•••••				• • • • • •			****		
ÆLL	DATE SAMPLED	FIELD ANALYSIS	LAB Analysis	LAB	DATE ANALYZED	DATE ANALYZED	DATE Analyzed	DATE ANALYZED	DATE ANALYZED
						••••••			
W-139	01/16/89			SAC	01/20/89			02/03/89	01/17/89
MW-139	01/16/89		AS	SAC				02/03/89	-
MW-142	01/18/89			SAC	01/23/89			01/27/89	01/19/89
MW-142	01/18/89		AS	SAC				01/27/89	
MW-142	01/18/89		MS	SAC	01/23/89				
MW-142	01/18/89		MSD	SAC	01/23/89				
MN-143	01/18/89			SAC	02/01/89			01/27/89	01/19/89
MW-143	01/18/89		AS	SAC				01/27/89	
MW-1000	01/09/89			SAC	01/11/89		•		
MW-1001	01/17/89			SAC	01/20/89				
MW-1002	01/13/89			SAC	01/19/89				
MW-1003	01/17/89			SAC	01/20/89				
MW-1004	01/17/89			SAC	01/23/89			02/06/89	
MW-1004	01/17/89		AS	SAC				02/06/89	
MW-1005	01/13/89			SAC	01/20/89				
MW-1013	01/18/89			SAC	01/23/89			01/27/89	
MW-1013	01/18/89		AS	SAC				01/27/89	
MW-1014	01/24/89			SAC	01/30/89			02/08/89	
MW-1014	01/24/89		AS	SAC				02/08/89	
MW-1015	01/10/89			SAC	01/12/89				
MW-1016	01/11/89			SAC	01/13/89			01/23/89	
MW-1016	01/11/89		AS	SAC				01/23/89	
MW-1019	01/18/89			SAC	01/31/89			01/27/89	01/19/89
MW-1019	01/18/89		AS	SAC				01/27/89	
MW-1020	01/18/89			SAC	01/31/89			01/27/89	
MW-1020	01/18/89		AS	SAC				01/27/89	
MW-1021	01/19/89			SAC	01/23/89	01/23/89			
MW-1022	01/19/89	FDA		SAC	01/23/89				
MW-1022	01/19/89	FDB		SAC	01/23/89				
MW-1023	01/11/89			SAC	01/13/89				
MW-1024	01/10/89			SAC	01/12/89				
W-1025	01/10/89			SAC	01/12/89				
W-1037	01/11/89			SAC	01/13/89				
W-1038	01/11/89			SAC	01/13/89				
W-1039	01/11/89			SAC	01/17/89				
QC - 1	01/11/89	TB		SAC	01/13/89				
ac-2	01/10/89	TB		SAC	01/12/89				
2C-3	01/20/89	TB		SAC	01/27/89				

MW = Monitoring Well

FDA = First field duplicate analysis

FOB = Second field duplicate analysis

TB = Trip blank

SAC = Radian Analytical Services, Sacramento

MS = Matrix spike MSD = Matrix spike duplicate

TABLE 1-9. (continued)

-======			********	=====		=========			=========
		U.S.EPA ME	THOD		SW8010	SW8020	SW8240	6010	7196
		MAXIMUM HO			14 DAYS	14 DAYS	14 DAYS	6 MONTHS	24 HOURS
• • • • • • • •	DATE	FIELD	LAB		DATE	DATE	DATE	DATE	DATE
WELL	SAMPLED	ANALYSIS		LAB	ANALYZED	ANALYZED	ANALYZED	ANALYZED	ANALYZED
QC · 4	01/20/89	TB		SAC	01/27/89				• • • • • • • • • • • •
QC · 5	01/25/89	TB		SAC	01/30/89				
PC-6	01/25/89	TB		SAC	01/30/89				
QC - 10	01/25/89	EB		SAC	01/30/89				
ac-11	01/31/89	EB		SAC	02/03/89				
2C-14	01/26/89	EB		SAC	01/31/89				
C - 25D	01/24/89	EB		SAC	01/30/89				
2C - 26D	01/23/89	EB		SAC	01/26/89				
C-28D	01/24/89	AB		SAC	01/27/89		•		
C-41S	01/16/89	AB		SAC	01/20/89				
C-71	01/30/89	AB		SAC	01/31/89				
IC-84	01/10/89	AB		SAC	01/12/89	01/12/89			
2C-129	01/12/89	AB		SAC	01/20/89				
aC-1004	01/17/89	A8		SAC	01/20/89				
ac-1014	01/24/89	EB		SAC	01/30/89				
ac-1019	01/18/89	AB		SAC	01/31/89				
QC-1022	01/19/89	AB		SAC	01/27/89				

EB = Equipment blank

SAC = Radian Analytical Services, Sacramento

TB = Trip blank

AB = Ambie blank

Some analytical results in this report are flagged with "P" or "PC." This notation means that the compound was confirmed in previous quarters by a second-column confirmation run; therefore, a second-column confirmation was not performed. In addition, some data are flagged with "B." This indicates that the compound was found in the reagent blank the day the sample was analyzed.

1.2.2 Presentation of Analytical Data

This section presents the results of the chemical analyses for groundwater samples collected during January through March 1989. In the following tables, the analytical results are presented by areas and by analytical method. Tables 1-10 through 1-13 present the results for Area A and Adjacent On-Base Areas. Tables 1-14 through 1-16 present the results for the Southeast Area. Tables 1-17 through 1-20 present the results for Area B and Adjacent On-Base Areas. Tables 1-21 through 1-23 present the results for the Southwest Area. Tables 1-24 through 1-28 present the analytical results from wells located in Area C and Adjacent On-Base Areas. The analytical results from Area D and from the Northwest Area are presented in Tables 1-29 through 1-33 and Tables 1-34 through 1-36, respectively. Table 1-37 presents the results from Other On-Base Areas.

TABLE 1-10. MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR AREA A AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN APB

Common Water State Maction Frienty M4-250		SHQ	U.S.EPA				WELL NUMBER	
	Parameter	Action	Primary	MM-25D	MM-25D	MW-26D	MW-/1	
te sampled by	Ground Water Zone	, ! ! !	! ! ! !	MIDDLE	MIDDLE	MIDDLE	MIDDLE	0 0 0 0 0 0 0 0 0 0
### RADIAN RADIAN RADIAN RADIAN RADIAN RADIAN PARAJAH ### Analysis	Date Sampled			01/24/89	01/24/89	01/23/89	01/30/89	
## Action	Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	
## SAC	Date Analyzed			01/30/89	01/30/89	01/26/89	01/31/89	
## Add July 1919 ## Add July	Lab			SAC	SAC	SAC	SAC	
Comparison	Field Analysis Lab Analysis			FDA	FOB			
1.2- Dichotocethane NE NE NE NE NE NE NE N	Chloromethane	XE	NE	QN	Q	QZ.	E CE	
Chicacide Chic	Bromomethane	NE	KE	£	Q	Q.	QN	
No.	Vinyl chloride	2	٠,	£	NO ON	N Q	S	
No.	Chloroethane	NE	NE	CN	2	Q	Q.	
No.	Methylene chloride	04	NE	MD	Q	Œ	Q.	
Dichloroethane	Trichlorofluoromethane	3400	NE	QN QN	QN	Ð	Q	
1.1 1.2 1.2 1.3	1,1-Dichloroethene	9	7	Q.	QN	Q	Q	
11.1.2-Dichloroethene 16 NE 1.0C 1.2P 0.40C ND 1.2P 0.40C Dichloroethene 16 NE 1.0C 0.31P 1.3C 0.54P 0.56P Dichloroethane 10 0.31C 0.24P ND	1,1-Dichloroethane	20	NE	Q.	NO ON	QN	Q	
100 100 0.31C 0.31P 1.3C 0.54P 0	Total 1,2-Dichloroethene	16	NE	1.00	1.2P	0.40C	Q.	
Dichlorocethane 1 5 0.19C 0.24P ND ND On tetrachlorocethane 200 200 ND ND ND ND Ont tetrachloride 5 5 ND ND ND ND Dichloropropene 10 NE ND ND ND ND Allorocethane 5 5 1.2C 1.1P 22C 0.59P Comochloromethane 100 NE ND ND ND ND Allorocethane 30 NE ND ND ND ND Allorocethane 100 NE ND ND ND ND Achlorocethane 130 NE ND ND ND <td>Chloroform</td> <td>100</td> <td>100</td> <td>0.310</td> <td>0.31P</td> <td>1.30</td> <td>0.54P</td> <td></td>	Chloroform	100	100	0.310	0.31P	1.30	0.54P	
1-Trichloroethane 200 100 ND ND ND ND ND October ND October ND	1,2-Dichloroethane		5	0.19C	0.24P	Q.	Q	
on tetrachloride 5 5 ND ND 0.24C ND Dichloropered 100 100 ND	1,1,1-Trichloroethane	200	200	QN	QN QN	QN	QN	
Oddichloromethane 100 ND ND ND ND Ditchloropropane 10 NE ND ND ND ND 13-1,3-dichloropropene NE NE ND ND ND ND 2-Titchloroethane 100 NE ND ND ND ND 1,3-Dichloropropene 87 NE ND ND ND ND 2-Titchloroethane 100 NE ND ND ND ND 1,3-Dichloroptopene 87 NE ND ND ND ND 2,2-Tetrachloroethane 1E NE ND ND ND ND 2,2-Tetrachloroethane 1E NE ND ND ND ND 10cberzene 30 NE ND ND ND ND Dichlorobenzene 130 NE ND ND ND ND Dichlorobenzene 130 NE ND ND ND </td <td>Carbon tetrachloride</td> <td>2</td> <td>5</td> <td>QN Qu</td> <td>Q.</td> <td>0.24C</td> <td>QN Qu</td> <td></td>	Carbon tetrachloride	2	5	QN Qu	Q.	0.24C	QN Qu	
Dichloropropane 10 NE ND ND ND ND ND ND 13-13-dichloropropene NE NE ND ND ND ND ND ND 2-Trichloroethane 100 NE ND ND ND ND ND ND 2-Trichloroethane 100 NE ND ND ND ND ND ND 1,3-Dichloropropene 87 NE ND ND ND ND ND ND 2,2-Tetrachloroethane 12,2-Tetrachloroethane 130 NE ND ND ND ND ND 1,2-Tetrachloroethane 130 NE ND ND ND ND ND ND 1,2-Tetrachloroethane 130 NE ND ND ND ND ND ND 1,2-Tetrachloroethane 130 NE ND ND ND ND ND ND 1,2-Tetrachloroethane 130 NE ND ND ND ND ND ND 1,2-Tetrachloroethane 130 NE ND ND ND ND ND ND ND 1,2-Tetrachloroethane 140 ND ND ND ND ND ND ND ND 1,2-Tetrachloroethane 150 ND ND ND ND ND ND ND ND ND 1,2-Tetrachloroethane 150 ND 1,2-Tetrachloroethane 150 ND	Bromodichloromethane	100	100	Q.	Q	Q.	Q	
1.2 - 1.3 - 41 chloroptopene	1,2-Dichloropropane	10	NE	æ	QN	QN	Q	
hidoroethene 5 5 1.2C 1.1P 22C 0.59P comcolloromethane 100 ND	Trans-1,3-dichloropropene	NE E	NE	Q	2	g	Q.	
Comochloromethane 100 ND ND ND ND 2-Trichlorosthane 100 NE ND ND ND ND 1.3-Dichloropropene 87 NE ND ND ND ND 1.0-cethylvinjl ether NE NE ND ND ND ND 2.2-Tetrachloroethane JE NE ND ND ND ND 2.2-Tetrachloroethane JE NE ND ND ND ND 2.2-Tetrachloroethane JO NE ND ND ND ND 2.2-Tetrachloroethane JO NE ND ND ND ND Dichlorobenzene JOO NE ND ND <	Trichloroethene	2	S	1.2C	1.1P	22C	0.59P	
2-Titchloroethane 100 NE ND	Dibromochloromethane	100	100	Q	Q	NO OM	QN	
1.3-Dichloropropene 87 NE ND	1,1,2-Trichloroethane	100	NE	8	QN	Q	S.	
Note thylwing Ether NE NE ND ND ND ND ND ND	cis-1,3-Dichloropropene	87	NE	SE CE	QN Q	QN	CN	
2,2*Terrachloroethane	2-Chloroethylvinyl ether	NE	NE	Q	Q	Q.	QN	
2.2-Tetrachloroethane	Bromoform	100	100	£	Q	QN	Q	
Second field duplicate analysis Second field duple of Services Second field Services Second Sec	1,1,2,2-Tetrachloroethane	H	NE	QN QN	æ	Q	QN	
No	Tetrachloroethene	4	NE	QN	Q.	ND	Q	
Dichlorobenzene 130 NE ND	Chlorobenzene	30	NE	Q.	Q X	Q.	Q	
Dichlorobenzene 130 NE ND	1,3-Dichlorobenzene	130	NE	Q.	Q	Q	QN QN	
Dichlorobenzene (LOQ)0.5 NE ND ND ND ND ND ND ND 1,2-Terrachloroethane NE NE ND	1,2-Dichlorobenzene	130	NE	QX	QN	QN	CZ.	
1,2-Tetrachloroethane NE NE ND	1,4-Dichlorobenzene	(LOQ) 0.5	S NE	QN	Q	NO ON	Q.	
UNITS ARE ug/1 = Monitoring Well = Pirst field duplicate analysis = Second field duplicate analysis P or P or	1,1,1,2-Tetrachloroethane	NE	NE	QN	S S	QN	ND QN	
 Molitoring Well First field duplicate analysis SAC = Radian Analytical Services, Sacramento C Second field duplicate analysis Por Por NE 	ALL UNITS ARE ug/1						HAARRAHAAN	<u> </u>
 First field duplicate analysis Second field duplicate analysis Port No. 				W =	lian Corporat	ion, Sacramen	10	
= Not		analysis e analysi		II	ilan Analytic	at Services,	osci americo	c - Analysis continued in second column analysis LOQ = Limit of quantitation P or PC = Identity breeigns!v confirmed
								. Not

TABLE 1-11. MASTER LOG OF WELLS SAMPLED FOR METHOD 8020 COMPOUNDS FOR AREA A AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER	æ
Ground Water Zone Date Sampled Sampled By Date Analysed Lab Field Analysis Lab Analysis			MIDDLE 01/23/89 RADIAN 01/26/89 SAC	
Chlorobenzene 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Benzene Ethylbenzene Toluene	30 130 130 (LQQ)0.5 .7 .7 680 100 NE		ND ND ND ND ND ND ND ND ND	
보조			RADIAN = Radian Corporation, Sacramento SAC = Radian Analytical Services, Sacramento	ND = Nothing detected LOQ = Limit of quantitation NE = Not established



TABLE 1-12. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR AREA A AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

	DHS	U.S.EPA			WELL NUMBER	BER
ameter	Action Level	Primary MCL	MW-25D	MW-25D	MW-71	
Ground Water Zuie	; ; ; ; ; ; ;	i : : : :	MIDDLE	MIDDLE	MIDDLE	144344411111111111111111111111111111111
Date Sampled			01/24/89	01/24/89	01/30/89	
Sampled By			RADIAN	RADIAN	RADIAN	
Date Analyzed			02/08/89	02/08/89	02/16/89	
Field Analysis Lab Analysis			FDA	FDB		
Antimony	NE	NE	Q.	QX	QX	
Arsento	ME	0.050	QN	2	9	
Beryllium	NE	NE	2	Ð	QN	
Cadentum	¥	0.010	QX QX	QN QN	ND	
Chromium	NE	0.050	0.01	0.013	0.008	
Copper	NE	NE	QN	Q	QN.	
Lead	æ	0.050	QN	QN	Ę	
Nickel	NE	NE	Q.	QN	QN.	
Selenium	N.	0.010	QN	QN	ND	
Silver	NE	0.050	ND	ND Qu	ND	
Thellium	NE	NE	QN	Q.	ND	
Zinc	Ä	NE	0.050B	0.031B	0.045	
Calcium	NE	NE	21	21	188	
Iron	NE	NE	0.032B	0.077B	0.188	
Magnestum	NE	NE	14	14	7.6	
Sodium	æ	NE	19	19	14	
Aluminum	NE	NE	QN	QN	QN	
Boron	NE	N E	600.0	0.01	0.016	
Barium	NE :	1.0	0.055	0.055	0.038	
Cobalt	Z :	NE :		Q !	QN :	
Potassium	1 2	NE	ON C		QN	
Manganese	NE	NE	0.014	0.01	0.029	
Molybdenum	N.	NE	QN	QN Q	QN	
Silicon	NE	NE	43	42	38	
Vanadium	NE	ΝE	0.025	0.26	0.022	-
ALL UNITS ARE mg/l MM = Monitoring Well FDA = First field duplicate analysis	icate analysis		RADIAN = Rad	lian Corporat lian Analytio	RADIAN = Radian Corporation, Sacramento SAC = Radian Analytical Services, Sacramento	UN R
FDB = Second field duplicate analysis	licate analysi	sı				NE = Not established

THELE 1-13. MISTER LOS OF WELLS SWIFLED FOR METHOD 71% FOR AREA A MID ADJAIDNIT ON-BASE AREAS, GROUNDWIDER SWIFLING AND ANALYSIS FROGRAM, LANLARY THROUGH WARCH 1989, HOLZILAN AFB

Parameter	Oris Action Level	U.S.EPA Primary MCL	M-25	M4-250	M4-71	HELL NUMBER	
Ground Water Zone			METER	MIDLE	MEDILE		
Date Sampled			01/24/89	01/24/89	01/30/89		
Sampled By			RADIAN	RADIAN	RADIAN		
Date Aralyzed			01/22/89	01/25/89	01/31/89		
9			SKC	36	38		
Field Amlysis Lab Amlysis			PQ.	F1.8		:	
Crondin VI	Ä	0.050 ND	2	0.03	2		
ALL UNITS AGE mg/l H4 = Manicoring Well H7A = First field duplicate analysis FIR = Securd field duplicate analysis	cate analysis	. 2	RADIAN = Re SAC = Re	dian Corpora dian Analyti	RNDIAN = Radian Corporation, Secramento SAC = Radian Amalytical Services, Secramento	o ecramento	N) = Nothing detected NE = Not established

1-38

TABLE 1-14. MASTER LOG OF WELLS SAMPLED FOR METHOD 8910 COMPOUNDS FOR THE SOUTHEAST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Ground Water Zone Date Sampled Sampled By Date Analyzed Lab Field Analyzis Lab Analyzis Chloromethane Bromomethane NE N Bromomethane NE N Chlorothane NE N	N N N N	MIDDLE 01/23/89	CUAL LOW				
	N N N N N N N N N N N N N N N N N N N	01/23/89	SHALLOW	SHALLOW	SHALLOW	MIDDLE	DEEP
7	NE NE		01/18/89	01/24/89	01/11/89	01/11/89	01/11/89
D 4 4 4	NE NE	KAULAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
M M M M M M M M M M	NE NE 1	01/30/89	01/23/89	01/30/89	01/13/89	01/13/89	01/1/89
	NE NE 1	34 C) 4 6	2	745	240	245
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	NE NE						
	NE 1	Q.	QN.	QN ON	ND	QN	N
de	1	Q.	QN	QN	QN.	QN.	ND
		QN	QN	ND QN	QN	Q	ND
	NE	Q.	QX	QN	CN	QN.	QN
	NE	Q.	QN	QN	Q	Q	QN
Trichlorofluoromethane 3400 N	NE	Q.	QN.	Q	QN	Q	QN.
•	7	QN	ND D	Q.	ND ON	CN.	UN
70	NE	QN	QN Qu	Q.	Q.	£	QN
Michloroethene 16	NE	Q	Q	Q.	Q.	2	QN
100	100	Q :	2	2			QX ::
	5	QN :	Q (2 !	2 :	Q !	Q ::
200 200	200	QN 1	Q.	2		2 !	
•	•	QN Q	QN		QN :		
100	001	2	Q :	2 !	2 :	2 9	
2 1	N I			2 5	9 9	2 §	2 4
	3 2	5 5	2 5	2 5		2 §	
200	200	2 5	2 5	2 5	9 6	1 5	2
201	O L	2 5	£ 5	£ 5	2	2	
87 87	N.	Q	2	Q	9 €	2	QN
r NE	NE	<u>Q</u>	QN	Q	QN	QN	ND
100	100	ND	QX	QN	ON	QN	ND
	NE	ND	NO ON	QN	ON	QN QN	ND
Tetrachloroethene 4 N	NE	UN	QN	QN	2	Q	ΩN
Chlorobenzene 30 N	NE	QN	QN	QN	Q	ND (QN
1,3-Dichlorobenzene 130 N	NE	QN	QN	QN.	£	ND QN	ND
1,2-Dichlorobenzene 130 N	NE	QN	2	Q	QN	Q	QN
(L0Q)0.5	NE	Q	QN	QN	QN Qu	Q	ND
1,1,1,2-Tetrachloroethane NE N	NE	ND	QN.	ND	QN.	NO ON	ND
ALL UNITS ARE ug/1							
MW = Monitoring Well		RADIAN = Rac	Mian Corporat	= Radian Corporation, Sacramento	to		Nothing detected
		SAC = Rac	dian Analytic	Radian Analytical Services, Sacramento	Sacramento	LOQ = Limit	= Limit of quantitation

TABLE 1-15. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR THE SOUTHEAST AREA, GROUNDWATER SAMFLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, MCCLELLAN AFB

	DBS Action	U.S.EPA Primary	MW-28D	MW-1013	MW-1014	WELL NUMBER
Parameter	Level		ı			
Ground Water Zone			MIDDLE	SHALLOW	SHALLOW	
Date Sampled Sampled By			01/23/89 RADIAN	01/18/89 RADIAN	01/24/89 RADIAN	
Date Analyzed			02/03/89	01/27/89	02/08/89	
Lab			SAC	SAC	SAC	
Field Analysis						
			1			
Ant Imony	44 i	NE.		Q !	Q !	
Arsenic	3	0.050		2	2	
Beryllium	Ä	Z.		£	£	
Cadmium	NE.	0.010		ę	Q.	
Thromium	N E	0.050		800.0	2	
opper	N.	NE		æ	QN	
pee	N N	0.050		S	Q.	
ickel	2	NE		0.12	0.34	
elenium	Ä	0.010		Q.	Q	
Ilver	ĸ	0.050		Q.	QN QN	
hallium	¥	NE		QX	QN	
Inc	띶	NE		0.007B	0.007B	
alcium	NE	NE		20B	24	
Iron	N.	NE		0.10B	0.14B	
Magnestum	NE	NE		138	15	
Sodium	Æ	NE		15B	16	
Aluminum	NE	NE		Q	Q	
Boron	NE	NE		0.009	600.0	
Barium	NE	1.0		0.041	0.061	
Cobalt	NE	NE		Q	Q.	
Potassium	NE	NE	QN	CN	QN QN	
Manganese	Æ	NE		0.012	0.57	
Molybdenum	NE	NE		Q X	QN QN	
Silicon	ÄE	NE		38	39	
Vanadium	ŭ	Ä		0.02	2	•

4

= Nothing detected
= Compound detected in laboratory blank - not edited
= Not established

N P N

RADIAN = Radian Corporation, Sacramento SAC = Radian Analytical Services, Sacramento

ALL UNITS ARE mg/1 MW = Monitoring Well

DMEE 1-16. MISTER LOS OF WELLS SAMELED BUR NETHED 71% FOR THE SOUTHEAST AREA, GROUNDMETR SMMELTIG AND ANALYSIS PROGRAM, JANUARY THROUGH WACH 1989, MICHELAN ARB

	岩	U.S.EPA	WELL NAMER
Parameter	Action	Primary N4-28D NG.	NH-280
Ground Water Zone			MILE
Date Sampled			01/23/89
Sempled By			RADIAN
Date Analyzed			01/23/89
4			ONS.
Field Amalysis			
Lab Analysis			
Orcanian VI	2	0.050 NO	2
ALL UNITS ARE mg/1			
M - Menitoring Well			RADIAN = Radian Corporation, Secramento ND = Nothing detected
			-

MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR AREA B AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROCRAM, JANUARY THROUGH MARCH 1989, MCCLELLAN AFB TABLE 1-17.

Parameter	Action Level	Primary MCL	MA-23D	MM-41S	MW-63	MW-63	MW-64	MW-120	MW-120	MV-121
Ground Water Zone	1 4 1 1 1 1 1	, , , , , , ,	MIDDLE	SHALLOW	DEEP	DEEP	DEEP	SHALLOW	SHALLOW	MIDDLE
Date Sampled			01/09/89	01/16/89	01/19/89	01/19/89	01/24/89	01/10/89	01/10/89	01/13/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/12/89	01/24/89	01/30/89	01/30/89	01/30/89	01/11/89	01/11/89	01/19/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis					FDA	FDB		FDA	FDB	
Lab Analysis										
Chloromethere	N.E.	32	CX	CZ	GN	QN	QN	Q.	CN	SE SE
Romonethane	1 12	, E	e e	£	2	2	Q	2	9	9
Vinyl chloride		! -	£	Q.	QX	Q.	Q	Q	9	9
Chloroethane	N.	N.	2	2	Ę	QN	QN	Ş	Ş	2
Methylene chloride	40	NE	QN	QN	QX.	QN.	QN	QN QN	Ę	QX
Trichlorofluoromethane	3400	NE	QN	QX	Q	QN	NO ON	Q	æ	Q
1,1-Dichloroethene	9	7	QN	QN	QN	Q	QN	ND	QN.	GN.
1,1-Dichloroethane	20	NE	QN	QN QN	Q.	QN	QN	Q.	Q.	QN QN
Total 1,2-Dichloroethene	16	NE	ON	Q.	290	310	QN	4 · 3C	4.30	QN.
Chloroform	100	100	ND	QN QN	0.74C	1.00	Q	0.290	0.310	Q.
1,2-Dichloroethane	-	S	MD	QN QN	0.560	0.670	Q	0.110	2	Q
1,1,1-Trichloroethane	200	200	ND	QN	QN	2	Ş	QN QN	CN.	Ş
Carbon tetrachloride	'n	S	QN	QN	QX	Q.	Q	£	Q	Q.
Bromodichloromethane	100	100	ND ON	9	QX	ND QN	Q	CN CN	Q.	æ
1,2-Dichloropropane	10	NE	QX	9	Q.	Q	Q.	2	2	g
Trans-1, 3-dichloropropene	NE	NE	£	Q	S	QN Q	Q.	QN	Q	Q
Trichloroethene	5	2	QN	3300C	5 2C	266	QN	76.4	5.10	£
Dibromochloromethane	100	100	ND ON	Q.	Q.	QN QN	Q	Q	QN QN	£
1,1,2-Trichloroethane	100	NE	ON	ě	Q	QN	Q	Q	QN	QN
cls-1,3-Dichloropropene	87	NE	ND CN	QN	Q	ΩN	QN		Q.	QN
2-Chloroethylvinyl ether	NE	ΝE	QN	Q.	Q.	Q	Q Q	Q.	Q	Q
Bromoform	100	100	QN	QN	ON	Q	Q	QN Q	2	Q
1,1,2,2-Tetrachloroethane	NE	NE	ZZ CZ	QN	QN.	Q	Q.	SZ.	2	æ
Tetrachloroethene	4	NE	ΝD	240C	QN	ND CN	QN	QN	Q.	N Q
Chlorobenzene	30	NE	ND ON	Q.	Q	QN	ND .	QN QN	ð	QN
1,3-Dichlorobenzene	130	NE	NO ON	Q.	Q.	ND Q	QN	QN.	QX QX	QN
1,2-Dichlorobenzene	130	NE	ND DA	QN	QN QN	QN	Q	QN	QX	ΩN
1,4-Dichlorobenzene	(LOO) 0.5 NE	NE	QN.	QN	QN	QN	8	QN	NO ON	QN
1,1,1,2-Tetrachloroethane	E SE	NE	QN	ND	QN	ND	ND	QN	QN	QN
ALL UNITS ARE ug/1			RADIAN = Rac	dian Corporat	Radian Corporation, Sacramento	to	ND * Mothin	* Nothing detected		
_	analvsis		Ħ	dian Analytic	Radian Analytical Services, Sacramento	Sacramento	Ħ	is confirmed	Analysis confirmed in second column analysis	umn analysi
FDB * Second field duplicate analysis	analysi	, v,		•			LOQ = Limit	- Limit of quantitation	uo	
	,							Not established		

	DHS	U.S.EPA			WELL NUMBER
	Action	Primary	MW-122	MW-132	
Parameter	Level	HCL.			
Ground Water Zone			DEEP	DEEP	
Date Sampled			01/10/89	01/16/89	
Sampled By			RADIAN	RADIAN	
Date Analyzed			01/12/89	01/20/89	
Lab			SAC	SAC	
Field Analysis					
Lab Analysis					
Chloromethane	- E	Z.	£	QN	# \$ { } \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
Bromomethane	NE	NE	Q	ND	
Vinyl chloride	7	-	Ę	ND	
Chloroethane	Ä	NE	Q	ND	
Methylene chloride	04	NE	£	ON	
Trichlorofluoromethane	3400	NE	QN	QN	
1,1-Dichloroethene	9	7	Q	GN	
1,1-Dichloroethane	20	NE	S.	QN	
Total 1,2-Dichloroethene	16	N.E.	NO OM	25C	
Chloroform	100	100	NO Qu	0.86C	
1,2-Dichloroethane	1	2	£	0.63C	
1,1,1-Trichloroethane	200	200	Q.	QN	
Carbon tetrachloride	\$	ۍ	2	QN	
Bromodichloromethane	100	100	Ş	CN	
1,2-Dichioropropane	10	NE	2	QN	
Trans-1,3-dichloropropene	(A)	NE	Q.	QN	
Trichloroethene	'n	5	Q.	82C	
Dibromochloromethane	100	100	Q.	QN	
1,1,2-Trichloroethane	100	N.	Q :	QN.	
cis-1,3-Dichloropropene	87	NE	2	QX	
2-Chloroethylvinyl ether	NE	NE	2	QN :	
Bromoform	100	100	2	2	
1,1,2,2-Tetrachloroethane	N E	NE		QN :	
Tetrachloroethene	4	NE	Q !	QX	
Chlorobenzene	30	Z E	ON.	CN	
1,3-Dichlorobenzene	130	N.E.	S C	QN	
1,2-Dichlorobenzene	130		Ş	ND.	
1,4-Dichlorobenzene	(100)0.5	5 NE	QN	CN.	
1,1,1,2-Tetrachloroethane	NE	NE	QN	ON	
ALL UNITS ARE ug/l					
MW - Monitoring Well			AN a	a Radian Corporation, Sacramento	
			SAC = R	Radian Analytical Services, Sacramento	007 I
					NE = NOT established

TABLE 1-18. MASTER LOG OF WELLS SAMPLED FOR METHOD 8020 COMPOUNDS FOR AREA B AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY TEROUGH MARCH 1989, McCLELLAN AFB

	· 中国公共的国际中央的现在分词共同共享的国际的国际的国际的基础。	机拉铁拉肉有有有用			CC (0 1111	
Parameter	DHS Action Level	U.S.EPA Primary MM-23D MCL	MW-23D	MM-41S	WELL NUMBER	
Ground Water Zone Date Sampled Sampled By Date Analyzed Lab Field Analysis	\) 	MIDDLE 01/09/89 RADIAN 01/12/89 SAC	SHALLOW 01/16/89 RADIAN 01/24/89 SAC		
Chlorobenzene 1,3-Dichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene Benzene Ethylbenzene Toluene	30 130 130 (LOQ) .7 .7 .680 100 NE	S S S S S S S S S S S S S S S S S S S	ON O	2 X X X X X X X X X X X X X X X X X X X		N.E. ND ND NE. ND ND NE. ND ND S.S. NE. ND ND ND ND NE. ND ND
ALL UNITS ARE ug/1 MW = Monitoring Well			RADIAN =	RADIAN = Radian Corporation, Sacramento SAC = Radian Analytical Services, Sac	 Radian Corporation, Sacramento Radian Analytical Services, Sacramento 	ND = Nothing detected LOQ = Limit of quantitation NF = Not established

TABLE 1-19. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR AREA B AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, MCCLELLAN AFB

SHALLOW SHALLOW SHALLOW HDDLE	Parameter	DHS Action Level	U.S.EPA Primary MCL	MW-41S	MW-120	MW-120	WELL NUMBER MW-121	
	Ground Water Zone Date Sampled Sampled By Date Analysed Lab Field Analysis			SHALLOW SHALLOW 01/16/89 RADIAN 02/03/89 SAC	SHALLOW 01/10/89 RADIAN 01/23/89 SAC FDA	SHALLOW 01/10/89 RADIAN 01/23/89 SAC FDB	MIDDLE 01/13/89 RADIAN 01/23/89 SAC	
	Antimony	NE	XE	NO.	SE CE	ND CN	QN	
Litan	Arsento	N	0.050	Q	QN	ND	ę	
um :E 0.010 ND ND ND ND tum NE 0.050 0.013 0.012 0.012 0.013 r NE NE ND ND ND ND 1 NE NE ND ND ND ND 1 um NE NE 11 6.2 23 33 1 um NE NE 11 6.5 6.8 13 1 um NE NE ND ND ND ND ND 1 um NE NE ND ND ND ND ND 2 um NE <	Beryllium	NE	NE	QN	QN	QN	QN	
Lum	Cadmium	Ä.	0.010	Q.	Q	Q	Q	
NE NE NE ND 0.010 0.010 ND	Chromium	NE	0.050	0.013	0.012	0.012	0.013	
NE	Copper	NE.	N E	QN	0.007	0.010	0.010	
1	Lead	¥	0.050	Q.	QN	QN	NO	
Lum NE 0.010 ND ND ND ND Lum NE 0.050 ND ND ND ND Lum NE NE NE 1.029B 0.029B 0.070SB 0.006B um NE NE 1.6B 22 23 33 33 stum NE NE 1.0B 0.038B 0.028B 0.045B 0.045B stum NE NE 1.1 6.5 6.8B 1.3 1.7 num NE NE ND 0.67 0.94 0.045B 0.053B num NE NE ND ND ND ND ND ND stum NE NE ND ND ND ND ND ND nesse NE ND ND ND ND ND ND ND denum NE NE ND ND ND ND	Mickel	NE	NE	Q	0.02	0.027	0.058	
NE NE NE ND ND ND ND ND	Selenium	NE	0.010	9	QN	QN	QN	
Lum NE NE ND ND ND ND um NE NE 0.029B 0.028B 0.0705B 0.006B um NE NE 0.038B 0.98B 1.4B 0.045B sium NE NE 11 6.5 6.8 13 17 num NE NE NE 12 13 17 17 num NE NE NE NE 0.013 ND ND 0.053 num NE NE ND ND ND ND ND silm NE ND ND ND ND ND ND silm NE NE ND ND ND ND ND num NE NE ND ND ND ND ND num NE NE ND ND ND ND ND num NE ND<	Silver	NE	0.050	Q	Q	9	Q	
NE NE 0.0298 0.0288 0.0068 0.0068	Thellium	NE	NE	Q	S	Q	Q	
NE NE NE 16B 22 23 33	2 inc	NE	N.	0.029B	0.0288	0.070SB	0.0068	
NE NE 0.038B 1.48 0.0458 1.48 1.3 1.4 1.3 1.4 1.3 1.4 1.3 1.4 1.3 1.3 1.4 1.3	Calcium	N.	N.	16B	22	23	33	
NE NE 11 6.5 6.8 13 13	Iron	NE	NE	0.038B	0.98B	1.4B	0.0458	
NE NE NE 12 13 17 17 13 17 15 15 15 15 15 15 15	Magnesium	Z.	NE	11	6.5	8.9	13	
NE NE ND 0.67 0.94 0.053	Sodium	N.	NE	16B	12	13	17	
NE NE NE NE NE NE NE NE	Aluminum	NE E	NE	QN QN	0.67	76.0	0.053	
Lum	Boron	N.	NE	0.013	QN	QN	0.170	
NE NE NE ND	Bartum	NE	1.0	0.038	0.185	0.2305	0.064	
NE NE ND	Cobalt	NE	NE	ND CM	QN	QN	QN.	
Potential NE	Potassium	NE	NE	Q.	QN	NC	ON	
NE NE ND	Manganese	Z	NE	0.01	0.1345	0.1925	0.019	
Leon NE NE 40B 26 27 30 NE ditum NE NE 0.026 0.009 0.011 0.014 NE	Molybdenum	¥	Z.	QX	QN	QN	QN	
UNITS ARE mg/l * Monitoring Well * First field duplicate analysis SAC = Radian Analytical Services, Sacramento B * Sacond field duplicate analysis SAC = Radian Analytical Services, Sacramento B * Sacond field duplicate analysis SAC = Radian Analytical Services, Sacramento B * Sacond field duplicate analysis SAC = Radian Analytical Services, Sacramento B	Silicon	NE	æ	40B	26	27	30	
UNITS ARE mg/l # Monitoring Well # First field duplicate analysis # SAC	Vanadium	NE	N.	0.026	600.0	0.011	0.014	
# Monitoring Well # First field duplicate analysis SAC = Radian Analytical Services, Sacramento B # Second field duplicate analysis C = Determined by Marked of Condend Addition NF	ALL UNITS ARE mg/1			PFINE NEW TOTAL				
* First field duplicate analysis SAC = Raddan Analysical Services, Services be a Canond field duplicate analysis C = Companies of Conduct Addition	MW - Monitoring Well	•		3	dian Corporat	lon, Sacramer	ıto	
	FDA = First fleid duplic	cate analysis		-	dian Analytic mised by Math	sal Services,	Sacramento A Addition	

"DIBLE 1-20. MISTER LG: OF WELLS SWIFLID FOR NETHOD 71% FOR MEA B AND ADJOINT OF BASE ARDAS, GROUNDARDER SWIFLING AND ANALYSIS FACRAM, JANJARY THOUGH MACH 1989, MICLELAN AFB

	DRS Action	U.S.EPA Primary NA-41S	LETL NAMER
Parameter		ğ	
Ground latter Zone Date Sampled Sampled By Date Analyzed Lab Field Analyzis Lab Analyzis			SHALCH 01/16/89 RADIAN 01/17/89 SAC
Orcanium VI	32	0.050 NO	N N
AL UNITS AND mg/l hg = Hanitowing Hell			RADIAN = Radian Corporation, Sacramento NO = Nothing detected SAC = Radian Aralytical Services, Sacramento NE = Not established

TABLE 1-21. MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR THE SOUTHWEST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, MCCLELLAN AFB

	Action	Primary	MW-1000	MW-1015	MW-1016	MW-1020	MW-1021	MW-1022	MW-1022	MW-1023
rarameter	revel	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
Ground Water Zone			MIDDLE	MIDDLE	SHALLOW	SHALLOW	SHALLOW	MIDDLE	MIDDLE	SHALLOW
Date Sampled			01/09/89	01/10/89	01/11/89	01/18/89	01/19/89	01/19/89	01/19/89	01/11/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/11/89	01/12/89	01/13/89	01/31/89	01/23/89	01/23/89	01/23/89	01/13/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis								FDA	FDB	
Lab Analysis										
Chloromethane	NE	NE	NO CM	ND	QN	QN	ND	QN.	2	QN.
Bromomethane	NE	NE	QN	QN	NO ON	ND	QN	QN QN	Q	QN
Vinyl chloride	2	7	QN.	QN	Q	Q.	QN	Q.	QN	QN
Chloroethane	NE	NE	Q	Q	Q	Q.	QN	Q.	2	QN Q
Methylene chloride	04	NE	Q	Ç,	0.93P	Q.	Q.	Q	Q.	QN
Trichlorofluoromethane	3400	NE	Q	QN	Q	ND CM	QN	8	Q	QN
1,1-Dichloroethene	9	^	Q	Q.	£		2	Q	Q	2
1,1-Dichloroethane	20	NE.	Q	Q	Q.	Q	2	Ş	£	QN
Total 1,2-Dichloroethene	16	NE	QN	Q.	Q !	0.130	0.94C	1.60	1.40	Q
Chloroform	100	100	QN	Q	2 :	2	0 17C	0.210	0.160	Q
1,2-Dichloroethane	1	S	QN	Q :	2 :	Q.	Ø	Q.	2	Q
I, I, I-Trichloroethane	200	200	QN			Q :	Q !	Q :	Q :	Q :
Carbon tetrachloride	\$	\$	2 !		⊋ (2 :		Q !	2	2
Bromodichloromethane	100	100	Q !		C S		2 1	2 1	2 !	2 :
1, 2-Dichloropropane	0 1	A L	2 9	2 2	2 5	Ž S	2 4	3 8	2 9	2 9
trans-1,3-dichloropropene	1	3 4	2 5	2 5	2 2	220	2	, c	20.	2 5
Irichiorethene	,	666	2 9	2 5	2 5	U. 32C	727) . T.	100	2 1
Ulbromochloromethane	100	100	2 4	2 5	2 5	⊋ ş	2 9	2 9	2 9	<u> </u>
1,1,2-irichloroethane	001	1) Li	2 9	2 5	2 5	2 9	2 5	2 9	2 9	2 9
cis-1, 3-Dichloropropene	6 2	1 1 2	2 9	2 5	2 5	2 5	2 5	2 5	2 9	2 5
2-chioroethyrunyi ether	200	100	2 2	£ 5	2	2 2	2 5	2 5	2 5	2 5
DICHESTORIA	201	201	2 2	9	2	2 5	2 5	9	2 9	2 9
1,1,1,1,1 1 1 1 1 1 1 1	7) (s	2 2	£ 5	Ę	2	۱ ۵۲	, E	, C	9 5
	, ,	. Z	2	2	2	2	NO N	, <u>,</u>	2	9
1 3-Dishlensene	130	1 2		2	2	2 2		£ 5	2 5	2
3-Dichiolobenzene	200	1 1	9 5	2 5	2 2	2 2	9 5	2 5	2 5	9 9
1,2-Dichlorobenzene	130	5 Z	2 2	Q (2	e S	2 5	£ 5	£ 5	2 5	2 5
1,4-Dichiologueme	15000	1	2 9	9	9		2 2	2 9	2 4	2 4
i,i,i,2-letrachloroethane	2		ON THE STREET	ND THE STATE OF THE STATE OF TH	AD THE THE THE THE THE THE THE THE THE THE	ND THE	a.	ON.	QN.	ON .
ALL UNITS ARE ug/l MW = Monitoring Well			RADIAN = Rac	lian Corporat	Radian Corporation, Sacramento	ţo	ND = Nothin	= Nothing detected		
FDA = First field duplicate analysis	analysis		Ħ	lian Analytic	Radian Analytical Services, Sacramento	Sacramento	C = Analys	is confirmed	= Analysis confirmed in second column analysis	umn analysi
FDB = Second fleld duplicate analysis	e analysi	ĸ					LOQ = Limit	LOQ = Limit of quantitation	uo.	
Ħ	4 C K 7 G 110 D	Ą					P or PC # 1	dentity previ	Ext = Limit of quantitation P or PC = Identity previously confirmed	يَو

Parameter	DHS Action Level	U.S.EPA Primary MCL	MW-1024	WELL NUMBER	ER
Ground Water Zone Date Sampled			MIDDLE 01/10/89	DEEP 01/10/89	
Sampled By Date Analyzed			RADIAN 01/12/89	RADIAN 01/12/89	
Lab			SAC	SAC	
Field Analysis					
Lab Analysis					
Chloromethane	XE	X.	ND	ND	1 1 1 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
Bromomethane	NE	NE	2	ND	
Vinyl chloride	7		£	QN	
Chloroethane	NE	NE	8	MD	
Methylene chloride	40	NE	QN	ND	
Trichlorofluoromethane	3400	N.	Q.	QN	
1,1-Dichloroethene	9	7	Q.	Q.	
1,1-Dichloroethane	20	NE	QN	ND	
Total 1,2-Dichloroethene	16	NE	2	ND	
Chloroform	100	100	2	QN	
1,2-Dichloroethane	-	٠	QN	QN.	
1,1,1-Trichloroethane	200	200	QN	QN	
Carbon tetrachloride	2	2	QN	ND	
Bromodichloromethane	100	100	S.	QN	
1,2-Dichloropropane	10	NE	Q.	ND	
Trans-1, 3-dichloropropene	NE	N .	2	ON	
Trichloroethene	5	ν.		QN	
Dibromochloromethane	100	100			
1,1,2-Trichloroethane	100	Z :			
cis-1,3-Dichioropropene	897	3 G	2 4	UN	
Z-Chioroethylvinyl ether	1 E	1 C	2 5	QN N	
bromororm	0 1	001	2 5		
1,1,2,2-jetrachioroethane	# 4	N N	2 5		
Chlorobenzene	30	N N	2	CN	•
1.3-Dichlorobenzene	130	Z.	Q.	QN	
1,2-Dichlorobenzene	130	N E	QN QN	ND	
1,4-Dichlorobenzene	(L0Q)0.5		QN	KD	
1,1,1,2-Tetrachloroethane	NE E	N.	ND	QN	
ALL UNITS ARE ug/1		K	RADIAN * R	Radian Corporation. Sacramento	ND - Nothing detected
			Ħ	Radian Anal, tical Services, Sacramento	_
					NE = Not established

TABLE 1-22. MASTER LOG OF WELLS SAMPLED FOR METHOD 8020 COMPOUNDS FOR THE SOUTHWEST AREA, CROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, MCCLELLAN AFB

Parameter	DHS Action Level	U.S.EPA Primary MCL	U.S.EPA U.S.EPA On Primary MM-1021	
Ground Water Zone Date Sampled Sampled By Date Analyzed Lab Field Analysis Lab Analysis			SHALLOW 01/19/89 RADIAN 01/23/89 SAC	
	30 130 130 100 (LOQ)0.5 1 . 7 . 7 . 100 NE	NE N	ON ON ON ON ON ON ON ON	
ALL UNITS ARE ug/l MW = Monitoring Well			RADIAN = Radian Corporation, Sacramento ND = Nothing detected SAC = Radian Analytical Services, Sacramento LOQ = Limit of quantitation NE = Not established	

TABLE 1-23. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR THE SOUTHWEST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

	Action Level	Primary MCL	MW-1016	M4-1020	
Ground Water Zone Date Sampled Sampled By Date Analysed	; ; ; ; ; ; ; ; ; ; ; ;	: : : : : : : :	SHALLOW 01/11/89 RADIAN	SHALLON 01/18/89 RADIAN 01/22/80	
Lab Field Analysis Lab Analysis			SAC	SAC	
Ant Lasony	N.	XE	Q.		
Arsenic	NE	0.050	Q.	QN	
Beryllium	NE	NE	Œ.	QN	
Cadmium	N.	0.010	2	윤	
Chromium	N N	0.050	Q.	0.017	
Copper	w Z	XE	0.038	2 1	
Lead	Z Z	0.050 NF	. KD	NO 0 019	
Selentum	NE	0.010	NO.	QN OX	
Silver	NE	0.050	QN QN	Q.	
Thallium	N.	NE	QN	QN	
Zinc	NE	NE	0.011B	0.0088	
Calcium	N.	NE	25	218	
Iron	X.	NE	0.0478	0.0278	
Magnesium	N.	NE.	8.1	6.4B	
Sodium	W !	N i	31	178	
Attenue	.) i4 Z Z	1 (4 2 2	ND 0.058	0. C	
Barium	ω	1.0	0.039	0.037	
Cobalt	NE	NE	2	QN	
Potassium	NE	NE	8.9	QN	
Manganese	NE	NE	0.085	0.005	
Molybdenum	NE.	NE	MD	QN	
Silicon	NE	X.	26	37	
Vanadium	NE	NE	0.019	0.023	
ALL UNITS ARE mg/1 MW = Monitoring Well		· · · · · · · · · · · · · · · · · · ·	RADIAN = Rac SAC = Ra	RADIAN = Radian Corporation, Sacramento SAC = Radian Analytical Services, Sacramento	ND = Nothing detected B = Compound detected in laboratory blank - not edited NE = Not established



MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR AREA C AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, MCCLELLAN AFB TABLE 1-24.

Parameter	Action	Primary MCL	EW-137	EW-137	EW-137	WELL NUMBER EW-140	BW-140	EW-140	EW-141	EW-141
Ground Water Zone Date Sampled	; ; ; ; ; ;	; 1 1 1 1 1 1 1	DEEP 01/12/89	DEEP 02/02/89	DEEP 03/01/89	DEEP 01/12/89	DEEP 02/02/89	DEEP 03/01/89	DEEP 01/12/89	DEEP 02/02/89
Sampled By Date Analyzed			RADIAN 01/17/89	KADIAN 02/03/89	RADIAN 03/03/89	RADIAN 01/17/89	KADIAN 02/03/89	03/03/89	01/17/89	02/03/89
tab Field Analysis Lab Analysis			S A C	SAC	SAC	SAC	S V S	SAC	SAC	S A C
Chloromethane	NE	NE	CN.	ZZ QX	Ę	ND	QN	Q.	Ę	Ş
Bromomethane	ME	NE	QN	Q.	QX	QN	QN	QN	Q.	Æ
Vinyl chloride	7	1	Q	ND ON	QN	QN	ON	2	Q.	CY.
Chloroethane	Z.	NE	QN	2	æ	Q.	QN.	£	Q	2
Methylene chloride	0,4	NE	9.00	210	£	QN	4.6C	Ş	Ş	Q.
Trichlorofluoromethane	3400	NE	Q :	9	2	Q	Q	2 !	2 :	2 !
I, I-Dichloroethene	• 6	NG.	ON C	1	NO 118	ND V	ND 2.	20	180 20 30 4	
Total 1.2-Dichloroethene	16	NE NE	130	J.2C	14P	280	300	250	260	200
Chloroform	100	100	QN	2	Ę	QN	0.680	0.680	8	Q
1,2-Dichloroethane	-	s	QN	QX	S.	QN	QN	QN.	QN	NO ON
1,1,1-Trichloroethane	200	200	QN	Q	QN	QN	QN	QN QN	Q	3.80
Carbon tetrachloride	5	2	QN	Q	QN	Q.	ND	QN	æ	£
Bromodichloromethane	100	100	QN	9	Q	QN	Q	Q	S S	2
1,2-Dichloropropane	10	NE:	2 9	QZ :	S :	QN :	2 1	2 9	2 9	2 9
Irans-1,3-qichloropropene	Q ,	Z v	J. 00 7	ON 7	200	O C	1600	ND 0.30	2300	2105
Dibromochloromethene	, 1	51		200	2010				, ; ; ;	
1.1.2-Trichloroethane	100	N.	2	2 2	2 2	2 2	2	9	2	2
cis-1,3-Dichloropropene	87	NE	NO ON	Q.	8	£	QN	NO ON	QN.	Q.
2-Chloroethylvinyl ether	NE	NE	ND	QN.	ND	QN		QN	£	æ
Bromoform	100	100	QN	QN	£	QN	QN	QN Q	QN Q	2
1,1,2,2-Tetrachloroethane	NE	NE	ND	Q.	NO	QN	Q		2	QZ .
Terrachloroethene	4	N H	8	2	2	Q.	2	2 !		. i
Chlorobenzene	30	N.	Q	£	S S	Q	2	2	Q :	
1,3-Dichlorobenzene	130	NE	2	Q.	2	Q.	£	Ĉ.		2
1,2-Dichlorobenzene	130	NE.	QN	NO ON	NO ON	QN		2	2 !	£ !
1,4-Dichlorobenzene	(LOQ)0.5 NE	NE C		Q	Q	Q	Q.	2 !	Q !	2
1,1,1,2-Tetrachloroethane	e Z	Z.	NO	Q X	Q	Q		QN	ND	ND
ALL UNITS ARE ug/1 EW = Extraction Well			RADIAN = Rac	lian Corporat	= Radian Corpocation. Sacramento	ç	ND = Nothing	Nothing detected		
			u	lian Analytic	Radian Analytical Services, Sacramento	Sacramento	C = Analysi LOQ = Limit o	C = Analysis confirmed in LOQ = Limit of quantitation	- Analysis confirmed in second column analysis - Limit of quantitation	umm analysis
							Por PC = Ic	PC = Identity previ	= Identity previously confirmed	p ə

Analytical data for EW-63 and EW-69 appear under MW-63 and MW-69

	SHQ	U.S.EPA				WELL NUMBER				
Parameter	Action Level	Primary MCL	EW-141	EW-144	EW-144	EW-144	MW-20D	MW-21D	MW-21S	MW-22D
Ground Harar Zona	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		DEEP		, , , , , , , , , , , , , , , , , , , ,	f	MIDDLE	MIDDLE	SHALLOW	DREP
Date Complete			03/01/80	01/11/10	04/00/00	03/01/00	01/22/00	00/00/00	01/27/00	08/61/10
			DADTAN	PADIAN	RADIAN	DANTAN	DADTAN	DANTAN	DANTAN	DADTAN
Date Analesa			03/03/89	01/23/89	02/03/89	03/03/89	01/27/89	01/27/89	01/30/89	01/20/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis										
Lab Analysis										
Chloromethane	32	NE NE	Q.	Q.	QN	QN CN	CN CN	Q	CN CN	ON
Brownethane) 2	Ä	QX.	9	QX	2	2	9	9	<u> 2</u>
Vinyl chloride	8	-	QX	£	Q.	2	£	Q.	2	2
Chloroethane	Z.	NE	QN	QN	QN.	QN	8	QX	QN C	QN
Methylene chloride	0,4		QN.	QN	150	QN	£	QX	2	QN
Trichlorofluoromethane	3400	NE	QX	QN	QN QN	NO	QN QN	Q.	8	NO.
1,1-Dichloroethene	9	7	NO ON	Ð	QX	QN	QN	ND	QN QN	QN
1,1-Dichloroethane	20	NE	7.4P	E E	1.90	8	QN QN	QK QX	0.34C	QN.
Total 1,2-Dichloroethene	16	NE E	15P	100	110	9.60	NO	QN QN	2.2C	QN
Chloroform	100	100	ND ND	QN	NO ON	ND ON	£	QK.	0.110	QN.
1,2-Dichloroethane	1	•	Q.	QN	QN	MD GM	Ð	æ	2	QN
1,1,1-Trichloroethane	200	200	2	9	NO NO	QN.	Q	Q.	Q	Q.
Carbon tetrachloride	5	5	S S	QX	QN	QN	QN	QN	Q.	QN
Bromodichloromethane	100	100	QN QN	Q	Q	S.	Q	Ş	Q	2
1,2-Dichloropropane	10	NE	QN	QN	Q.	Ð	Q	Q	Q	QX
Trans-1, 3-dichloropropene	N.	N.	8	Q.	ND Q	Q.	Q.	2	Q.	QX
Trichloroethene	5	'n	120P	310C	340C	240C	QN Qu	QN QN	1.50	QN
Dibromochloromethane	100	100	Q.	NO ON	2	9	Q.	2	QX	Q
1,1,2-Trichloroethane	100	NE	QN	QV.	æ	ON	NO ON	Q.	2	
cis-1,3-Dichloropropene	87	NE	Q.	Q.	Q	QN	QN	Q.	£	QZ.
2-Chloroethylvinyl ether	NE	NE	£	9	QN	QN	æ	S S	£	QN
Bromoform	100	100	Q.	QN	QN.	MD	QN	QV Qu	£	QN
1,1,2,2-Tetrachloroethane	NE	NE	NO NO	QN	QN.	QN Q	Q.	QN	Q	QN.
Tetrachloroethene	4	NE	QN	Q.	QX	QN Qu	ND v	2	Q.	QN
Chlorobenzene	30	NE	Q.	SK.	QN	Q	QX	Q.	Q	QX
1,3-Dichlorobenzene	130	NE	NO.	NO.	Q.	QX.	QN	2	Q	Q.
1.2-Dichlorobenzene	130	NE	QN.	S S	2	QN QN	QN	Q	QN	£
1,4-Dichlorobenzene	(LOQ)0.5	5 NE	ND	QN	QN	QN	ND	CN	S S	Q.
1,1,1,2-Tetrachloroethane	Æ	NE	QN	N Q	QN.	QN	QN	QN C	QN	ND
2 .		ik 1000 1000 1000 1000 1000 1000 1000 10	A DATE OF THE PROPERTY OF THE				!!		的非异性性有的非常症状	
<pre>nw = monitoring well EW = Extraction Well</pre>			4 4	lian Analytica	Radian Analytical Services, Sacramento	acramento	no = nothing C = Analysi	s confirmed 1	* Notaing detected * Analysis confirmed in second column analysis	mn analysis
							LOQ = Limit o P or PC = Id	<pre>= Limit of quantitation : PC = Identity previous</pre>	nit of quantitation * Identity previously confirmed	10
							NE = Not established	abl i shed		

	DHS	U.S.EPA				WELL NUMBER				
Parameter	Action Level	Primary MCL	MW-33S	MM-44S	MM-60	MW-61	MW-62	Mu-75	MW-114	MW-115
Ground Water Zone	† 1 1 1 1 1 1	1 f t 1 f f	SHALLOW	SHALLOW	SHALLOW	SHALLOW	SHALLOW	MIDDLE	SHALLOW	MIDDLE
Date Sampled			01/11/89	01/18/89	01/13/89	01/20/89	01/11/89	01/25/89	01/20/89	01/16/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/17/89	01/31/89	01/19/89	01/27/89	01/13/89	01/30/89	01/27/89	01/20/89
Lab 			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis Lab Analysis										
Chloromathana	32	3.0	9	CN.	6	ON.	,	2	£	£
Bromomethane	×) <u> </u>	2	2 5	2 2	2 5	2	2	2	9
Vinyl chloride	8	٦.	Q	9	2	Q	2	Q.	Q	Q.
Chloroethane	NE	NE	S	2	Q	8	QN	Q.	QN	2
Methylene chloride	04	NE	11000	æ	0.490	SK SK	QX	æ	Q¥	QX
Trichlorofluoromethane	3400	NE	QN.	Q.	ND	CN	ND	QX.	Q.	£
1,1-Dichloroethene	9	,	QN	4.7P	Ð	QN Qu	QN	Q.	8	
1,1-Dichloroethane	20	NE	QX	QN	ND QN	ę	QN	Q.	9	2
Total 1,2-Dichloroethene	16	NE	580P	Q	QN	QN QN	0.20	1.10	0.25P	Q
Chloroform	100	100	QN	QN Qu	QN.	Q.	QN	Q.	2	2
1,2-Dichloroethane	-	s	200P	QN	QX	Q.	9	QX	2	Q.
1,1,1-Trichloroethane	200	200	9	QN	Q.	AD.	QN.	0.23C	2	2 :
Carbon tetrachloride	'n	2	Q	Q X	Q	QN	QN	£	Q.	2
Bromodichloromethane	100	100	Q.	QN	2	NO ON	£	2	2	
1,2-Dichloropropane	10	NE	9	NO NO	QN	QN	QN ·	2	Q !	
Trans-1, 3-dichloropropene	W W	NE	2	2	QN	Q.	QN	£	£	<u>.</u>
Trichloroethene	'n	2	17000P	1.1P	QN	12C	0.46C	120	2	
Dibromochloromethane	100	100	Q	QX.	QN.	QN	QN	2	Q	2
1,1,2-Trichloroethane	100	NE	Q.	2	Q	NO ON	QN.	Q.	Q.	Q
cis-1, 3-Dichloropropene	. 87	NE	Q	Q.	ND CM	Q.	2	Ş	2	e e
2-Chloroethylvinyl ether	M M	NE	Q	QX QX	ND	QN.	NO NO	Q :	2	2 !
Bromoform	100	100	QN	Q	Q	Q.	Q	Q.	Q:	2 :
1,1,2,2-Tetrachloroethane	N N	NE	Q.	Q	QN	Q.	Q.		2	Q !
Tetrachloroethene	4	NE	Q	QN	ND D	QN.	NO.	2	g.	
Chlorobenzene	30	NE	QN	Q.	QN	ND	Q.	0.12C	2	2 :
1,3-Dichlorobenzene	130	N N	2	NO NO	Q.	ND QN	Q.	Q	2	
1,2-Dichlorobenzene	130	NE	2	NO	QN.	QN	ND CM	0.38C	QN :	2
1,4-Dichlorobenzene	(L0Q)0.5	5 NE	Q.	Q	Q	QN		2	Q	2
1,1,1,2-Tetrachloroethane	Ä	NE	QN	QN	ND	QN	QN	Ş	QN	QN
ALL UNITS ARE ug/l			RADIAN = Rad	unsumanandasankankanandasakan Badian Corboration Sacramento	operatorists on Sacrament	《 化二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二二	ND = Nothing detected	detected		
			Ħ	Radian Analytical Services, Sacramento	Services, S	acramento	*	s confirmed 1	Analysis confirmed in second column analysis	m analysis
			U = Unconf	= Unconfirmed, second column not requested	column not r	equested	LOQ = Limit o P or PC = Id	= Limit of quantitation PC = Identity previous	<pre>nit of quantitation = Identity previously confirmed</pre>	75
								abl 1shed	•	

	DHS	U.S.EPA				WELL NUMBER				
	Action	Primary	MH-128	MM-129	MW-129	MM-130	MW-131	MW-133	MM-133	MW-134
Parameter	Level	Į,	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
Ground Water Zone			SHALLOW	MIDDLE	MIDDLE	DEEP	SHALLOW	DEEP	DREP	DEEP
Date Sampled			01/12/89	01/12/89	01/12/89	01/12/89	01/12/89	01/19/89	01/19/89	01/16/89
Samp and Rv			RAJIAN	N.DIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/17/85	01/23/89	01/20/89	01/19/89	01/19/89	01/23/89	01/23/89	01/20/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Fiel Analysis				FDA	FDB			FDA	FOB	
Lab malysis	,									
Chloromethane	ME	NE	QX	Q.	QN	Q.	QX.	QN.	QX	Ę
Brosomethane	¥	Z Z	2	Q	2	Q	QN	£	£	2
Vinyl chloride	7	-	2	2	QN	QN QN	QX QX	Q.	S.	£
Chloroethane	NE	NE	Q	QN	ON	QN QN	QN	QX QX	æ	æ
Methylene chloride	04	NE	8000	QN QN	QN QN	QN	Q.	Q.	S	æ
Trichlorofluoromethane	3400	Ä	QN	QN	CM	NO ON	Q	NO	Q	£
1,1-Dichloroethene	•	7	MO CM	QN	QN	2.8P	QN	Q.	ð	Q.
1,1-Dichloroethane	20	NE	QN	Q	QN	5.8P	NO QN	Q.	QN Q	QX
Total 1,2-Dichloroethene	16	NE	190C	1.6C	1.00	1.1P	19P	Q.	Ø	0.39C
Chloroform	100	100	Ð	QN	Q	0.40P	2.0P	Q	Ş	Ş
1,2-Dichloroethane	-	ş	QN	Q.	æ	QN	0.82P	Q	Q	QN.
1,1,1-Trichloroethane	200	200	QN	2.30	Q	0.78P	Q	NO NO	æ	QN.
Carbon tetrachloride	s	s	QN	Q	QN	9	£	Q.	QN QN	QN
Bromodichloromethane	100	100	Q	QN	QN		QN	S.	Q.	Ş
1,2-Dichloropropane	10	NE	Q	QN	QN	QN	QN	Ą	Q.	£
Trans-1, 3-dichloropropene	N.	NE	덪	ΩN	ND	Q.	Q.	Q	g	£
Trichloroethene	2	ç	17000C	170C	140C	2.7P	90P	£	ð	2.90
Dibromochloromethane	100	100	QN	QN	<u>R</u>	2	2	2	Q	2
1,1,2-Trichloroethane	100	NE	2	QN :	2	2	2		2	
cis-1, 3-Dichloropropene	87	N N	2	Q.	2	2	Q	2	2	
2-Chloroethylvinyl ether	NE	NE	Q.	Q	2	€.		Q.	QN	
Bromoform	100	100	2	Q	2	2		2	2	Q
1,1,2,2-Tetrachloroethane	NE	NE	2	2	2	2 :	Q !		2	
Tetrachloroethene	4	N.	2	QZ :	2	2	Ź:	2		
Chlorobenzene	30	X.	ð	Q.	2	2	9	£	8	QM
1,3-Dichlorobenzene	130	NE	NO ON	Ş	2	£	9	£	QN QN	
1,2-Dichlorobenzene	130	NE E	2	2	Q	2	2	£	2	QN
1,4-Dichlorobenzene	(L0Q)0.5		2	QN	NO ON	Q	QX.	Q.	Q	Ç.
1,1,1,2-Tetrachloroethane	NE E	NE	2	QN Q	QN	QN	QN	Q.	Q.	QN
ALL UNITS ARE ug/1							Í			
MW - Monitoring Well			- X	- Radian Corporation, Sacramento	tion, Sacrame	nto	*	Nothing detected		
FDA = First field duplicate analysis	s analysis		SAC = B	Radian Analytical Services, Sacramento	cal Services,	Sacramento	C = Analys	is confirmed	- Analysis confirmed in second column analysis	.umn analysis
FDB = Second field duplicate analysis	e analysi	13					LOQ = Limit	LOQ = Limit of quantitation	LOQ = Limit of quantitation o or bo = Identity pressionally confirmed	7
							NF - NO	- Not setablished	nation (tends	Š

	DHS	U. S. EPA				WELL NUMBER			
Parameter	Action Level	Primary MCL	MW-135	MW-136	MW-138	MW-138	MW-139	MV-142	MW-143
Ground Water Zone	1 1 3 4 4 7	; ; ; ; ; ; ;	MIDDLE	DEEP	DEEP	DEEP	SHALLOW	DEEP	DEEP
Date Sampled			01/16/89	01/26/89	01/12/89	01/12/89	01/16/89	01/18/89	01/18/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/20/89	01/31/89	01/20/89	01/20/89	01/20/89	01/23/89	02/01/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis Lat Analysis					FDA	FDB			
Chloromethane	NE NE	NE	QN ON	ES CE	NO N	QN.	S	Q.	ND
Bromomethane	NE	NE	Q	QN	QN.	Q.	Q	QN.	CN
Vinyl chloride	2	-	Q.N	QN.	QN	QN	Q	Q Q	CN CN
Chloroethane	NE	NE	Q.	Q.	Q	QN	QN	2	S
Methylene chloride	04	X.	Q.	QN	Q	QX	2	0.760	SE S
Trichlorofluoromethane	3400	NE	QN	QN Q	QN ON	QN.	QN.	Q	CIN
1,1-Dichloroethene	9	7	Q X	Q.	Q	Q	Q	S.	CN CN
1,1-Dichloroethane	20	NE	QN	7.20	QN.	ΩN	14C	Q.	Ç.
Total 1,2-Dichloroethene	16	NE	5.0C	6.2C	Ð	ę	26 C	<u>Q</u>	ND
Chloroform	100	100	0.71C	QN	ND	QX	1.10	S	ND
1,2-Dichloroethane	1	Ş	0.30C	Q.	Q.	QN	1.10	Q.	CM
1,1,1-Trichloroethane	200	200	ND CM	Q.	QN	2	2.20	2	ND
Carbon tetrachloride	2	5	Q.	Q	ON	Q	Q	Q.	ND
Bromodichioromethane	100	100	QN	QN	ND QN	QX QX	Q	QN Q	ND
1,2-Dichloropropane	10	NE	QN QN	QN	QN QN	8	Q.	2	QN
Trans-1, 3-dichloropropene	NE	NE	Q.	2	QN	Q	Q	2	ND
Trichloroethene	2	SC.	25C	230C	8	QN	950	SE CE	ND
Dibromochloromethane	100	100	ND CM	Q.	æ	2	2	2	CN
1,1,2-Trichloroethane	100	NE	Z.	9	2	8	Q.	2	SE SE
cis-1,3-Dichloropropene	87	NE	KD CM	QX	Q Q	£	2	2	NO NO
2-Chloroethylvinyl ethek	Ä	NE	Ç	QN	S.	Q !	Q :		CN
Bromoform	100	100	2		Q X !	QN !			2
1,1,2,2-Tetrachloroethane	NE	NE	2	2	2	Q :	QN I		
Tetrachloroethene	4	NE	웆	Q	2	Q !	Ć.		QN.
Chlorobenzene	30	NE	Q.	Q.	Ŝ	2	2	£	£
1,3-Dichlorobenzene	130	NE	QX Qx	Q	ΩN	g	2		S
1,2-Dichlorobenzene	130		Q	QX	ON	Q	QN	2	QN
1,4-Dichlorobenzene	(100)0.5		2	QN	Q.	QZ QZ	£	Q.	CN CN
1,1,1,2-Tetrachloroethane	NE	NE	ND	ND	Ni	ND	ND	ND	ND
ALL UNITS ARE ug/1									
MW = Monitoring Well			RADIAN - Rad	lan Corporati	RADIAN - Radian Corporation, Sacramento	0	ND = Nothing	Nothing detected	
FDA = First field duplicate analysis	analysis		v	ian Analytica	* Radian Analytical Services, Sacramento	cramento	Ħ	s confirmed in	Analysis confirmed in second column analysis
FDB = Second fleid duplicate analysis	e analysi	v,	U * Unconf	irmed, second	* Unconfirmed, second column not requested		ı.	Limit of quantitation	
							NE = Not est	Not established	

MASTER LOG OF WELLS SAMPLED FOR METHOD 8020 COMPOUNDS FOR AREA C AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROCRAM, JANUARY THROUGH MARCH 1989, MCCLELLAN AFB TABLE 1-25.

	II SHU	II S EPA				WELL NUMBER				
Parameter	Action Level	ä	EW-137	EW-137	EW-137	EW-140	EW-140	EW-140	EW-141	EW-141
Ground Water Zone	,	1 1 1 1 1 1 1 1 1	DEEP	DEEP	DEEP	DEEP	DEEP	DEEP	DEEP	DEEP
Date Sampled			01/12/89	02/02/89	03/01/89	01/12/89	02/02/89	03/01/89	01/12/89	02/02/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	KADIAN	RADIAN	RADIAN
Date Analyzed			01/17/89	02/03/89	03/03/89	01/17/89 SAC	02/03/89 SAC	03/03/89 SAC	01/17/89 SAC	02/03/89 SAC
Lab Field Analysis Lab Analysis) We) VC	Š	2				
Chlorobenzene	30	Z.	QX QX	ND	QN	QN	NO ON	MD	CN	NO NO
1.3-Dichlorobenzene	130	Z.	Q.	Ş	QN	QX	QN Qu	Q	Q.	QN
1.2-Dichlorobenzene	130	i W	2	S	QN	Q Q	Q.	QN CN	N Q	QN
1.4-Dichlorobenzene	(100)0	5 NE	Q¥	Q	Q.	QN	S	Q.	N Q	£
Benzene		٠	QN	QN	Q	QN.	Z	Q	QN	QZ.
Ethylbenzene	989	χE	N ON	QN	2	QN	2	2	QN	æ
Toluene	100	N N	æ	£	Q	3.60	£	£	QN	QQ.
Total Xylenes	NE NE	NE.	Q	QN	QN	GN	MD	MD	ND	ND
ALL UNITS ARE ug/l EW = Extraction Well			RADIAN = R SAC = R	RADIAN = Radian Corporation, Sacramento SAC = Radian Analytical Services, Sacramento	ion, Sacramen al Services,	ito Sacramento	ND = Nothin C = Analys LOQ = Limit NF = Not es	Nothing detected Analysis confirmed in second column analysis Limit of quantitation Not essalished	in second col	um analysis

Analytical data for EW-63 and EW-69 appear under MW-63 and MW-69

DHS U.S.E Action Prime	DHS Action	PA	EW-141	EW-144	EW-144	Well number EW-144	MW-33S	MH-75	MW-128	
Parameter	Level	TOE:	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							
Ground Water Zone	1 1 1 1 1 1 1 1 1 1 1 1		DEEP 03/01/89	01/18/89	02/02/89	03/01/89 BADTAN	SHALLOW 01/11/89 RADIAN	MIDDLE 01/25/89 RADIAN	SEALTON 01/12/89 RADIAN	
Sampled By			RADIAN 03/03/89	01/23/89	02/03/89	03/03/89	01/11/89 SAC	01/30/89 SAC	01/17/89 SAC	
Lab			SAC	SAC	3 4 6	2				
Field Analysis Lab Analysis					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
			6N	£	ND	QN	QN Qu	2		
Chlorobenzene	30	3 1	9	£	æ	QN	Q	2	2	
1,3-Dichlorobenzene	130	4 I	2 9	} ⊊	S	2	£	£		
1,2-Dichlorobenzene	130	S S	2 9	2 5	2	8	Ş	Q	2	
1,4-Dichlorobenzene	(100)0.	5 NE	2 9	9 5	2	S	£	Q	2	
Benzene	۲.	s :	2 1	2 5	£	Q	Q	2	2	
Ethylbenzene	089	M I	2 9	2 5	2	Q.	QN	SKO	Q.	
Toluene	100	a i	2 9	£	2	æ	QN	£		
Total Xylenes	2 2	NE					***************************************			
	P. 内容的 对 医 的 医 的 为 的 的 的 的 的 的 的 的 的 的 的 的 的 的 的									
ALL UNITS ARE ug/1 MW = Monitoring Well			RADIAN = R	adlan Corpora	RADIAN = Radian Corporation, Sacramento	nto Sacramento	ND = Nothi	Nothing detected = Limit of quantitat	ton	
EW = Extraction Well			SAC = N	adian Analyu	Kadian Analytical Services,		NE = Not e	= Not established		

MASTER LOG OF WELLS SAMPLED FOR METHOD 8240 COMPOUNDS FOR AREA C AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROCRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB TABLE 1-26.

	SHO	U.S.EPA	WELL NUMBER
Parameter	Action Level	Primary MCL	EW-144
Ground Water Zone			
Dare Samiled			03 (12)
Sampled By			RADIAN
Date Analyzed			01/24/89
Lab			SAC
Field Analysis			
Lab Analysis			
Chloromethane	NE	NE.	QX
Bromomethane	NE	NE	QN
Vinyl chloride	7	н	QN
Chloroethane	NE	NE	ND ND
Methylene chloride	0,4	NE	3.1
Trichlorofluoromethane	3400	NE	Y.Y
1,1-Dichloroethene	9	7	QN ON
l, l-Dichloroethane	20	NE	QN
Total 1,2-Dichloroethene	16	NE	12
Chloroform	100	100	ND
1,2-Dichloroethane	-4	5	QN
I, I, I-Trichloroethane	200	200	Q
Carbon retrachloride	٠,	٠ .	ND ST
1 2-Dichloroproper	9 5	001	מוס
1,2 Diministration 1,2 Dimin	- 2	3 7	AN N
Trichloroethene		5	
Dibromochloromethane	100	100	ON.
1,1,2-Trichloroethane	100	NE	ND ND
cis-1,3-Dichloropropene	87	NE	QN
2-Chloroethylvinyl ether	Z.	NE	QN
Bromoform	100	100	QM
1,1,2,2-Tetrachloroethane	Z.	N I	QV
Tetrachloroethene	4 (N N	G.
Rensene) r	3 4	· ·
Ethylbenzene	089	្រ	NI)
Toluene	100	N.	i i
Acetone	NE	NE	QN
Carbon disulfide	NE	N E	ND ND
2-Butanone	NE	NE	QN
Vinyl acetate	NE	NE	ND .
2-Bexanone	æ	NE	QN
ALL UNITS ARE ug/1 EW = Extraction Well	; { ! ! ! ! ! !	 	QN
			SAC = Radian Analytical Services, Sacramento NA = Not analyzed NF = Not established

			WELL NORBER
	DHS	U.S.EPA Primary	EW-144
Parameter	Level	7	Parameter
Ground Water Zone Date Sampled Sampled By Date Analyzed			01/18/89 RADIAN 01/24/89 SAC
Field Analysis Lab Analysis		1	Field Analysis Lab Analysis
4-Methyl-2-pentanone Styrene Total Xylenes	NE NE NE	NE NE NE	N SW ON SK NO ON SK N
ALL UNITS ARE ug/l EW = Extraction Well			RADIAN : Radian Corporation, Sacramento ND = Nothing detected SAC = Radian Analytical Services, Sacramento NE = Not established



TABLE 1-27. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR AREA C AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

Parameter	Action	Primery MCL	EW-137	EW-140	EW-141	EW-144	MM-20D	MW-21D	MV-21S	MW-22D
Ground Water Zone			DEEP	DEEP	DEEP	DEEP	MIDDLE	MIDDLE	SHALLOW	DEEP
Date Sampled			01/12/89 BADIAN	01/12/89	01/12/89 DADIAN	01/18/89 PADTAN	01/23/89 PADTAN	01/23/89 PADIAN	01/24/89 RADIAN	01/12/89 DADIAN
Date Analyzed			01/25/89	01/25/89	01/25/89	01/27/89	02/03/89	02/03/89	02/08/89	01/25/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis Lab Analysis										
Antimony	NE	NE	GN.	Q.	QX	N.	9	Q	Ş	Q
Arsenic	S.	0.050	9	2	2	2	2	2	2	QN
Beryllium	NE	ME	Q	£	Q	QN	QX	QN	æ	Q
Cadestum	N.	0.010	Q	Q.	Q.	Q	Q	Q	Q.	QN
Chromium	NE	0.050	0.014	0.015	0.018	0.015	0.014	0.015	Ş	0.015
Copper	N.	NE	Q.	QN	Q	Q	9	æ	£	Q.
Pead	NE	0.050	æ	QN	Q	2	2	Q	Q	Q.
Hickel	3. D	NE	Q	QN	Q	Q	£	0.030	2.2	9
Selentum	NE.	0.010	Q	QN	£	Q	2	2	2	£
Silver	NE	0.050	QN	QN	QN	æ	2	2	£	Q
Thallium	NE	NE	ND Qu	Q	2	g	2	£	£	2
21nc	N E	NE	0.013B	0.004B	0.005B	0.005B	0.017	0.012	0.025B	0.0048
Calcium	NE	NE	36	27	33	258	16B	15B	11	16
Iron	N H	ĸĒ	0.018B	0.019B	0.022B	0.020B	0.041B	0.0538	4 . 7B	0.012B
Magnesium	NE	NE	28	21	26	18B	12	11	6.2	12
Sodium	Ξ.	NE	23	19	22	188	15B	16B	13	14
Aluminum	N.	NE	QN.	QN QN	Đ	Q.	Q.	Q	Ž.	2
Boron	N E	NE	0.053	970.0	0.054	0.030	0.24	0.037	0.014	0.022
Barium	ΝE	1.0	0.15	0.10	0.12	0.098	0.061	0.049	0.047	0.057
Cobalt	NE	NE	QX	QN	QN	£	Q	ð	0.041	£
Potassium	æ	NE	ND CN	QX	QN	Q.	Q.	2	2	Q
Manganese	NE	NE	Q	Q	Q	S.	0.007	0.004	0.61	Ð
Molybdenum	N.	NE	CN	Q	Q	QN	QN	Q.	QN.	Q.
Silicon	NE	NE	41	41	41	4.2	41	39	34	4.2
Vanadium	N E	NE	0.023	0.023	0.020	0.028	0.081	0.032	ND	0.031
٠.										
MW = Monitoring Well EW = Extraction Well			SAC # Ra	Radian Corporation, Sacramento Dadian Analyrical Services, Sacramento	RADIAN = Kadian Corporation, Sacramento	Sacramento	B = Compor	<pre>" Nothing detected " Compound detected in laboratory blank - not edited</pre>	in laboratory	blank - not

Analytical data for EW-63 and EW-69 appear under MW-63 and MW-69

£.,

TABLE 1-27. (continued)

SHALLOW 01/13/89 01/20/89 RADIAN 01/23/89 02/03/89 SAC SAC SAC ND	SHALLOW 01/11/89 RADIAN 01/23/89 SAC ND ND ND ND ND ND ND ND ND ND ND ND ND	MIDDLE 01/25/89 RADIAN 02/08/89 SAC ND ND ND ND ND	MIDDLE 01/16/89 RADIAN 02/03/89 SAC ND ND ND ND ND ND ND ND ND ND ND ND ND	SHALLOW 01/12/89 RADIAN 01/25/89 SAC ND ND ND ND ND ND
,	RADIAN 01/23/89 SAC ND ND ND ND ND ND ND ND ND ND ND ND ND	RADIAN 02/08/89 SAC ND ND ND ND ND	RADIAN 02/03/89 SAC ND ND ND ND ND ND ND ND ND ND ND ND ND	RADIAN 01/25/89 SAC ND ND ND ND ND ND
	SAC SAC ND ND ND ND ND ND ND ND ND ND ND ND ND	SAC ND ND ND ND ND ND ND	02/03/89 SAC ND ND ND ND ND 0.015 0.011	SAC ND ND ND ND ND ND ND ND ND
			SAC ND ND ND ND O 0 015 O 0 011	SAC MD MD M
N N N N N N N N N N N N N N N N N N N		999999	ND ND ND ND O . 0 115 O . 011	ON O
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			ND ND ND ND 0.015 0.011 ND	ON O
N N N O O O O O O O O O O O O O O O O O			ND ND ND 0.015 0.011 ND	
N ON O O O O O O O O O O O O O O O O O	<u> </u>		ND ND 0.015 0.011 ND	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<u> </u>	9 9 9 9	ND 0.015 0.011 ND ND	
0 . 008 ND ND ND ND ND	<u> </u>	2 2 2 1	0.015 0.011 ND ND	ON OO
2 2 2 2 2 2 2 2 2 2	2 2 2 2	22 1	0.011 ND ND	2 2 3
	2 2 2	2 9	£ £	E .
Q Q Q Q	2 2	•	Z.	_
ON ON	2	2 ;	•	
		2 9	2 9	2 9
Ē	2 9			2 2
0.0118	0.0078	0.0068	0.034B	0.003B
128	26	16	158	42
0.15B	0.41B	0.0868	0.0198	0.358
6.8	11	11	12	30
148	21	15	158	26
Q	980.0	QN	Ð	æ
0.014	0.027	0.020	0.028	0.015
0.022	0.051	0.057	0.11	0.11
£	Q	Q	2	0.010
2	2	Q.	£	Q
0.023	0.053	0.10	2	0.029
Q	Q.	QN	QN	Q
37B	291	39	40B	07
0.021	0.012	0.025		,
	0.0118 128 0.158 8.9 148 ND 0.014 0.022 ND ND ND ND ND		0.0078 26 0.418 11 21 21 0.036 0.027 0.051 ND 0.053	26 1.00 58 1.00 58 2.00 58 2.00 58 2.00 5.00 5.00 5.00 5.00 5.00 5.00 5.00

	Level	HCL			007	MW-131	MM-133	MW-133	MW-134	MW-135
Ground Water Zone Date Sampled			MIDDLE	MIDDLE 01/12/89	DEEP 01/12/89	SHAL1.0W	SHALLOW 01/19/89	SHALLOW 01/19/89	DEEP 01/16/89	MIDDLE 01/16/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/25/89	01/25/89	01/25/89	01/25/89	02/02/89	02/02/89	02/03/89	02/03/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis Lab Analysis			FDA	FDB			FDA	FDB		
Ant imony	ME	XE	CN.	Q.	Ę	GN	Q.	ND	Đ.	Ę
Arsenic	NE	0.050	2	æ	QN	ND QN	QX	Q.	Q	£
Beryllium	NE	N	Q.	Ę	QN	QN	QX	QN	ę,	QX
Cadmium	NE	0.010	CN CN	Q	Q	Q	S.	Ę	운	£
Chromium	NE	0.050	0.015	0.016	0.011	0.014	600.0	800.0	0.011	0.012
Copper	NE	NE	Q	Q	ND QN	QN	QX	QN	Đ.	ND CM
Lead	Ä	0.050	욮	Q.	Q	Q	Q.	Q.	£	£
Nickel	NE	NE	QN	Q	0.018	0.030	Q	Q	Ę	ę
Selenium	NE	0.010	QN	Q.	QN	S	QN	Q	2	ę
Sllver	Ä	0.050	Q	£	Q.	2	2	Q	£	윷
Thalllum	N E	N.	Q	Ş	ND	NO.	Q	Q	£	æ
Zinc	NE.	NE	0.0038	0.003B	0.0448	0.012B	900.0	0.012	0.12B	0.0398
Calcium	N.	NE	14	14	28	17	23B	24B	188	218
Iron	N.	NE	0.012B	0.009B	0.040B	0.0158	0.014	0.049	0.039B	0.016B
Magnestum	NE	NE	11	11	22	12	12	12	12	7.2
Sodium	Ä	NE	15	15	19	17	188	198	188	16B
Aluminum	Z	NE	QN	Q	Q.	CN	Q	Q	문	Q
Boron	NE	NE	0.021	0.018	0.042	0.014	0.073	0.074	870 0	0.028
Bartum	Ä	1.0	0.039	0,00.0	0.12	0.047	0.048	0.049	0.048	0.049
Cobalt	Ä	NE	QN	Q.	Q.	Q N	Q	Q.	£	Z.
Potassium	NE	NE	Q	ND CN	Q.	QN	Q.	S	Ę	Z.
Manganese	N H	NE	£	2	0.003	0.002	0.007	0.007	윷	g
Molybdenum	NE	NE	QN	Q.	ND	ND	QN	QN Q	2	2
Silicon	N.E.	NE	07	07	0.4	40	101	07	40B	3 8B
Vanadium	NE	NE	0.030	0.030	0.026	0.027	0.023	0.023	0.023	0.031
ALL UNITS ARE mg/1										
MW - Monitoring Well			- 24	dian Corporat	RADIAN = Radian Corporation, Sacramento	ito	•	Nothing detected		
First field duplicate analysis	sate analysis	.	SAC = 4a	iian Analytic	Kadian Analytical Services, Sacramento	Sacramento	roduno.	Compound detected 1	In Laboratory	Compound detected in jaboratory blank - not edited

TABLE 1-27. (continued)

	SEC	6.3.6.0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	900	900	000	27.		
Parameter	Level	MCL	001-11	OC T - ME	OC T - MIL	CCT_MU	757	0 + T - ML	
Ground Water Zone	• • • • • • • • • • • • • • • • • • •		MIDDLE	MIDDLE	MIDDLE	SHALLOW	DEEP	DEEP	i i i
Date Sampled			01/26/89	01/12/89	01/12/89	01/16/89	01/18/89	01/18/89	
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	
Date Analyzed			02/16/89	01/25/89	01/25/89	02/03/89	01/27/89	01/27/89	
Lab			SAC	SAC	SAC	SAC	SAC	SAC	
Field Analysis Lab Analysis				FDA	FDB				
Antimony	3.7		CN.	Q.	GN.	QN	£	G.	-
Arsento	ιω: 22.	0.050	2	Q	g	2	2	Q.	
Beryllium	NE	N.E	2	QN	WD	0.034	QN.	QN.	
Cadmitum	NE	0.010	QX	Q X	Q	0.033	QX QX	QN	
Chromium	NE	0.050	QN	600.0	0.010	0.043	0.015	0.014	
Copper	NE	NE	0.007	Q.	Q	05: 3	8	£	
Lead	NE	0.050	£	Q	Q	Q.	Q	QN	
Nickel	NE	NE	0.047	QN	Q	0.21	2	QN	
Selenium	NE	0.010	QN	QN.	Q.	QN	QN	QN	
Silver	NE	0.050	QN	ND	Q	0.027	Q	QN	
Thallium	æ	NE	Q	Q.	Q	0.054	£	Q	
Zinc	N.	NE	0.024B	0.0078	0.0048	0.0688	0.007B	0.0148	
Calcium	NE	NE	40B	20	20	86 7	18B	198	
Iron	NE	NE	0.011B	0.0118	Q.	0.168	0.024B	0.025B	
Magnesium	NE	NE	27	10	10	36	118	13B	
Sodium	N H	NE	4.2	18	18	28B	158	16B	
Aluminum	NE	NE	QN	QN	Q	QN	2	9	
Boron	NE	NE	990.0	0.035	0.034	090.0	0.027	0.025	
Bartum	NE	1.0	860.0	0.043	0.043	0.15	0.039	0.070	
Cobalt	Ξ	ΝE	QN	QN.	Q	0.035	2	QN	
Potassium	N.	NE	QN.	QN.	QN	QN	Q	CN	
Manganese	NE	NE	0.003	QN	QN	. 680.0	0.002	0.003	
Molybdenum	ω W	ΝE	QN	QN	Q	QN	Ð	Q	
Silicon	NE	NE	35	39	39	39B	431	45	
Vanadium	N.	NE	0.015	0.026	0.026	0.049	0.032	0.034	
**************************************								化苯甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲	
MW - Monitoring Well			RADIAN = Ra	dian Corporat	RADIAN = Radian Corporation, Sacramento	ito	•	Nothing detected	
FDA = First field duplicate analysis	ate analysis	_	SAC = Ra	dian Analytic	al Services,	Sacramento	B = Compou	Compound detected in laboratory blank - not edited	edited

TABLE 1-28. MISTER LIGG OF MELLS SMIPLED FOR METHED 7196 FOR AREA C AND ADLACKET CH-BASE AREAS, CROLIDIANDERS SMIPLING AND AMALYSIS FROGRAM, JANUARY TIFROLEH MAICH 1999, MICHELIAN APB

	948					WELL NIMBER	~			
Parameter	Act ion Level		Primary 54-137 MC.	B4-1 40	B4-141	BH-144	H-20	14- 210	M4-21S	₹ -29
Ground Water Zone			23 23 20	2E30	230		MINE	MEDIE	HOTHES	63
Date Sampled			01/12/89	01/12/89	01/12/89	01/18/89	01/23/89	01/23/89	01/24/89	01/12/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	PADIAN
Date Analyzed			01/13/89	01/13/89	01/13/89	01/19/89	01/23/89	01/23/89	01/25/89	01/13/89
qe]			SKC	Si	SS	Sec	SkC	S	SAC	Sec
Field Amlysis Lab Amlysis										
Chromium VI	2	0.050 0.02	20.02	2	0.02	2	2	2	40.0	0.02
ALL UNITS ARE mg/l M4 = Manitoring Nell B4 = Extraction Nell Extraction Nell Analysical data for Elect and Electronic Nets Manitorical data for Electron Nell Manitorical data for Electron Nell Manitorical data for Electronic Nell Maniformatic Nell Man	63 and Flatfo	1691	RADIAN = F SAC = F	RADIAN = Radian Corporation, Secramento SAC = Radian Amalytical Services, Secramento By Match = Amalytical Services, Secramento	tion, Secramer	ito Sacramento	ND = Nothing detected NE = Not established	= Nothing detected = Not established		

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TARE 1-28. (continued)

	S 1 1	U.S.EPA				WELL NIMBER	~			
Parameter	Act ion Level	Primary M.1.	Primary M4-33S M3.	S***-#¥	№ 115	M4-130	M+133	M4-133	M-134	M-135
Ground Matter Zone			SEWLOW	SEMILOW	MODLE	£20	233 201	88	333	MEDILE
Date Sampled			01/11/89	01/18/89	01/16/89	01/12/89	01/19/89	01/19/89	01/16/89	01/16/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/12/89	01/19/89	01/11/89	01/13/89	01/20/89	01/20/89	01/17/89	01/17/89
3			SAC	Sec	SS	S	38	S	Sec	SAC
Field Amlysis Lab Amlysis							Æ	F108		
Ourcontum VI	12	0.050	2	2	2	2	2	2	2	Q
AL LUUTS AEC mg/1 14 - Munitocing Well 15 - Pirst field deplicate analysis 17 - Second field deplicate analysis	ate aralysis	្នុង	RADIAN = R	RADIAN = Radian Corporation, Sacramento SAC = Radian Analytical Services, Sacramento	tion, Sacrame cal Services,	nto Sacramento	ND = Northing detected NE = Not established	g detected stablished		

TARE 1-28. (continued)

Parameter	DES Action Level	U.S.EPA Primary M4-139 M3.	M+139	HH- 142	M#-143	HELL NAMER	
Ground Matter Zone Date Sempled Sempled By Date Avalyzed Lab Fleid Avalysis Lab Avalysis			SWLCH DEPP 01/16/89 01/18/ RADIAN RADIAN 01/17/89 01/19/ SAC SAC	DEEP 01/18/89 RADIAN 01/19/89 SAC	DEEP 01/18/89 RADIAN 01/19/89 SAC		
Owemium VI	Ä	ON 0500	2	2	2		
All UNITS ANG mg/l HM = Haultoring Well		Ħ	RADIAN = Ras	lian Corporat tian Analytik	RNDIAN = Radian Corporation, Secramento SAC = Radian Analytical Services, Secramento	cramento	ND = Northing detected NE = Not established

MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR AREA D AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, MCCLELLAN AFB TABLE 1-29.

Parameter	DHS Action Level	U.S.EPA Primary MCL	EW-73	EW-73	EW-83	WELL NUMBER EW-83	EW-83	EW-84	EW-84	EW-84
***************************************			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1 1 1 1 1 1 1 1 1 1					
Ground Water Zone										
Date Sampled			02/01/89	03,01/89	01/04/89	02/02/89	03/01/89	01/10/89	01/10/89	02/02/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			02/03/89	03/03/89	01/11/89	02/03/89	03/03/89	01/12/89	01/12/89	02/03/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis								FDA	FDB	
Lab Analysis									,	
Chloromethane	Z Z		CN.	CN.	CX	QN	CN	CZ	Q.N.	£
Bromomethane	NE	Z Z	2	2	9	2	2	2	2	Q
Vinyl chloride	~	٦.	1500P	1000P	2	<u> 2</u>	Q.	410P	620P	440C
Chloroethane	NE	NE	QN.	QN QN	QX	2	Q	QN	QN QN	QN
Methylene chloride	04	NE	1300P	Q	QN	150C	QN QN	40P	QN	2 9 C
Trichlorofluoromethane	3400	NE	ND	QN	QN	QN	QN	æ	Q.	ę.
1,1-Dichloroethene	9	7	7000F	\$400P	390P	9200	410P	1200P	2000P	1300C
1,1-Dichloroethane	20	NE	800P	930P	QN.	MD	ND	240P	370P	207C
Total 1,2-Dichloroethene	16	NE	730P	740P	ND ON	QN	Q.	230P	210P	220C
Chloroform	100	100	QN	Q.	CN	ND	QN	QN	2	QN
1,2-Dichloroethane	1	2	QN Qu	QN.	QN	QN	ND ON	65P	56P	120C
1,1,1-Trichloroethane	200	200	790P	930P	25P	QN	18P	140P	210P	1300
Carbon tetrachloride	2	2	ND	QN	QN	Q	Q	Q	Q.	2
Bromodichloromethane	100	100	Q.	Q	QN	QN	QN	QN Qu	Q.	Q
1,2-Dichloropropane	10	Z.	Q	Q	Q	S	Q	Q	2	2
Trans-1,3-dichloropropene	N E	Z)	Q	2	Q	Q	Q.			NC.
Trichloroethene	5	~	1100P	690P	41P	QN	42P	980P	1600P	1200C
Dibromochloromethane	100	100	Q		Q	Q.	Q	£	Q	2
1,1,2-Trichloroethane	100	NE	QZ.	Q.	QN.	NO.	Q	QN	2	2
cis-1,3-Dichloropropene	87	Z E	Ş	2	Q	Q	Q	Q	2	2
2-Chloroethylvinyl ether	Z E	Z H	QN	QN	QN	QN.	ND Q	Q.	g	2
Bromoform	100	100	Q	Q.	QN	Q.	Q	Q	2	2
1,1,2,2-Tetrachloroethane	N E	NE	QN Q	QN	Q	Q	ND	QN	Q	QN
Tetrachloroethene	4	NE	QN	QN	3.1P	7.80	Q.	QN	Q	œ
Chlorobenzene	30	NE	QN	Q.	QN	QN	ND,	QN	NO ON	ND
l, 3-Dichlorobenzene	130	NE	Q	QN	Q	Q	QN	Q	Q.	Q
, 2-Dichlorobenzene	130	NE	QN QN	QN	QN Qu	QN	QN	Q	S	36C
,4-Dichlorobenzene	(LOQ)0.5 NE	S NE	QN	QN	Q	QN	Q.	QN	Q	Q
1,1.1,2-Tetrachloroethane	NE	NE	ND Qu	QN _D	ΝΩ	QN	ND	QN	NO.	Q
ALL UNITS ARE ug/1 EW = Extraction Well	"P > 1 6 1 4 4 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	## ## ## ## ## ## ## ## ## ## ## ## ##	RADIAN = Ra	dian Corporat	= Radian Corporation. Sacramento		ND = Nothir	Nothing detected		
	analysis		u	dian Analytic	Radian Analytical Services, Sacramento	Sacramento	u	is confirmed	Analysis confirmed in second column analysis	lumn analysi
FDB = Second field duplicate analysis	e analysi	s,					LOQ = Limit Por PC = 1	= Limit of quantitation PC = Identity previou	LOQ = Limit of quantitation P or PC = Identity previously confirmed	pe q
							Por PC = 1	PC = Identity previ	ously contin	ă

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机树枝属 医线性 医乳球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球	DHS	U.S.EPA	9 H H H H H H H H			WELL NUMBER				
Parameter	Act lon Level		EW-84	EW-85	EW-85	EW-85	EW-86	EW-86	EW-86	EW-87
Ground Water Zone		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	; ; ; ;	4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	; ; ; ; ; ; ;	 	; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !	
Dage Sampled			03/01/89	01/07/89	02/02/89	03/01/89	01/04/89	02/02/89	03/10/10	08/50/10
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			03/03/89	01/11/89	02/03/89	03/03/89	01/11/89	02/03/89	03/03/89	01/11/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis										
Lab Analysis										
Chloromethane	NE	32	ND CX	ND	ND ND	QN	E E	ND	Q	CN.
Bromomethane	NE	NE	QN	ND QN	QN	QX	Ð	QN	QX	2
Vinyl chloride	7		350C	QN	NO ON	QX.	ę,	QN	QN	Q.
Chloroethane	NE	NE	QN	QN	QN Qu	Q.	Q.	ND	Z.	2
Methylene chloride	04	NE	QN	Q	92P	Q	£	7.6P	NO ON	QN.
Trichlorofluoromethane	3400	NE.	ND ON	QN	ND	QN	Ş	Q	Đ	Q.
1,1-Dichloroethene	9	7	860C	2009	880P	550P	100P	74P	56P	100P
1,1-Dichloroethane	20	NE	180C	QN	ě	26P	Q.	QN	QN	Ş
Total 1,2-Dichloroethene	16	NE	190C	110	ND	14P	QN	QN QN	QN QN	2.3P
Chloroform	100	100	QN	ND CM	QN	Q.	£	£	QN QN	Q
1,2-Dichloroethane	~	2	110C	130	ND	QN	Q.	QN QN	Q	SE SE
1,1,1-Trichloroethane	200	200	110C	120C	130P	76P	38P	34P	21P	8.2P
Carbon tetrachloride	2	5	QN.	QN	QN	Q	ND QN	Q.	Ð	Ş
Bromodichloromethane	100	100	NI)	QN	Q.	g	Q¥	Q,	Q.	2
1,2-Dichloropropane	10	NE	QN.	QN	Q.	£	Q	QN	ND	Q.
Trans-1, 3-dichloropropene	NE	NE	2	2	2	Q.	Q.	QN	Q	Q.
Trichloroethene	2	\$	720C	700¢	660P	330F	42P	40P	25P	39P
Dibromochloromethane	100	100	ND ND	QN:	Q	2	Q	QN	ND ON	QN
1,1,2-Trichloroethane	100	ΞZ	8	2	Q.	Q	£	£	Q.	QN.
cis-1,3-Dichloropropene	87	NE	Q.	Q	QN	2	2	Q	QN	QN
2-Chloroethylvinyl ether	NE	NE	QN.	Q	Q	Q.	Q	Q.	QN Qu	Q
Bromoform	100	100	Q.	Q	QN Q	Q	Q.	Q.	Q	NO ON
1,1,2,2-Tetrachloroethane	NE	NE	Q.	QN	NO	Ş	2	QZ	QN	QN
Tetrachloroethene	4	NE	Q.	Q	QN	<u>N</u>	₽	NO ON	QN	Q
Chlorobenzene	30	NE	ND	QN	QN	Q.	S S	Q.	Ð	QN
1,3-Dichlorobenzene	130	NE	QN	Q	ND	Q	2	Q.	Q.	2
1,2-Dichlorobenzene	130	NE	41C	QN	Q	QN Q	Q.	2	NO ON	QN
1,4-Dichlorobenzene	(LOQ)0.5	z	Q	ON	QN.	QN.	QN	ND ON	QN	ON
1,1,1,2-Tetrachloroethane	NE.	z	2	QN	QN	QN	NO	ON	ND	QN
ALL UNITS ARE ug/1		7 7 10 11 11 11 11 11 11 11 11 11 11 11 11								
EW = EXTERCTION WELL			į	= Madian Corporation, Sacramento	Oll, Sectement	0.	4 1	מפופנופת		
			SAC = Kad	Kadian Analyticai Services, Sacramento	i services, ;	sacramento	LOQ = Limit o	LOG = Limit of quantitation	n second colu	um analysis
							For FC = Identity p	= identity previously contirmed r astablished	usly confirme	o
								2017770		

	!	,								
Parameter	Action	Primary MCL	EW-8/	/8~M3	MM-10	MW-11	MM -12	7 T - ME	CT-MM	TC - Mi
Ground Water Zone	; ; ; ;	! ! ! !	; ; ; ; ; ; ;	; ; ; ; ; ; ; ;	SHALLOW	SHALLOW	SHALLOW	SHALLOW	SHALLOW	DEEP
Date Sampled			02/02/89	03/01/89	01/25/89	01/31/89	01/25/89	01/26/89	01/25/89	01/06/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			02/03/89	03/03/89	01/30/89	02/02/89	01/30/89	01/31/89	01/30/89	01/11/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis										
Lab Analysis										
Chloromethane	NE	NE	Q.W.	ND	QN	QN	QN	QN	ND CM	ND
Bromomethane	NE	NE	Q	Q.	Q	ND	Q.	QN.	NO.	ND
Vinyl chloride	2	-	QN	QN	730	QN	Q.	QX	CN	ON
Chloroethane	NE	NE	QX	QN	QN	ND	QN	Q	Q	Q
Methylene chloride	07	NE	NO CN	QN	QN QN	QN	QN	QX	QN	Q.
Trichlorofluoromethane	3400	NE	Q	QN	QN	ND	QN	æ	QX	QN Qu
1,1-Dichloroethene	9	7	140C	100C	840C	19000C	2600P	4600C	280C	QN
1,1-Dichloroethane	20	NE	1.50	1.30	110C	270C	QN QN	QN	Q	S.
Total 1,2-Dichloroethene	16	NE	3.30	2.90	130C	190C	QN	QN	Q	QN
Chloroform	100	100	Q	QN	ON	QN	GN	Q.	QN	Q.
1,2-Dichloroethane	7	5	Q.	QN	2500	ND ON	QN.	340	QN	QX
1,1,1-Trichloroethane	200	200	110	7.60	QN	2600C	360P	2300C	170C	Q
Carbon tetrachloride	s	2	Q.	ND GN	QN	QN	QN	QN	MD	Q
Bromodichloromethane	100	100	Q.	Q X	ND	QN	QN	æ	QN	Q
1,2-Dichloropropane	10	NE	NO ON	Q	Ð	Q	2	Q	QN	QN
Trans-1,3-dichloropropene	NE	NE	QN Qu	QN	Q	Q	£	Ş	QN Q	ND CM
Trichloroethene	s	5	28C	36C	1300C	2900C	590P	4100C	340C	MD
Dibromochloromethane	100	100	QN QN	QN.	QN	QN	Q	Q	Q	QN QN
1,1,2-Trichloroethane	100	NE	ΝD	Q X	QN	QN	Q	Q	QX	QN
cis-1,3-Dichloropropene	8.7	NE	NG GN	QN	QN QN	QN	QN	2	QX	Q
2-Chloroethylvinyl ether	NE	NE	QN Q	Q	ND QN	ΝD	Q	윤	QN.	Q.
Bromoform	100	100	Q.	Q.	ND	QN	Q	Q	Q	8
1,1,2,2-Tetrachloroethane	NE	NE	9	Q X	QN	ND	Q	2	QX	Q.
Tetrachloroethene	4	NE	0.540	2	QN	QN	38P	2	Q	2
Chlorobenzene	30	NE	Q.	Q	2	QN	Q.	Q	Q	Q
1, 3-Dichlorobenzene	130	NE	QN.	Q	Ø	ON	QX	Q	Q	Q
1,2-Dichlorobenzene	130	NE	QN	QN.	140C	QN	QN	Q.	Q.	æ
1,4-Dichlorobenzene	(LOQ)0.5	S NE	QN QN	NO	QN	QN	QN.	QN	QN	QX
1,1,1,2-Tetrachloroethane	_	NE	QN	ND	QN	QN	QN	QN	ND	Q.
ALL UNITS ARE ug/1	E 11 of 11 o	11 H	STATES AND THE STATES OF S				Catherna CM		THI I PLUT THE THE THE THE THE THE THE THE THE TH	
			11	dian Analytic	Radian Analytical Services, Sacramento	Sacramento	, 11	Monthling werecreed Analysis Analysis confirmed in second column analysis	in second col	umn analysi:
					•		LOQ = Limit P or PC = I	= Limit of quantitation PC = Identity previously confirmed	on ously confirm	ie d

Parameter	DHS Action Level	U.S.EPA Primary MCL	MW-52	MW-54	MW-55	WELL NUMBER MW-57	MW-58	MW-59	MW-70	MW-72
Ground Water Zone	, 	,	MIDDLE	MIDDLE	MIDDLE	MIDDLE	DEEP	DEEP	MIDDLE	MIDDLE
Date Sampled			01/18/89	01/11/89	01/06/89	01/09/89	01/09/89	01/05/89	01/05/89	01/06/89
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/31/89	01/20/89	01/11/89	01/11/89	01/11/89	01/11/89	01/11/89	01/11/89
Lab			SAC	SAC	SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis Lab Analysis										
Chloromerhane	SN.	£ 2	CX.	UN.	Ca	2	9	QN.	9	GN CN
Bronomethane	1 E	1 K		2	2 5	€ €	9 5	2 5	9 9	2 5
Vinyl chloride	2		9	2	2	S C	9	£ 5	2 5	£ £
Chloroethane	NE	NE	QN	QN	Q.	2	2	2	2	9
Methylene chloride	07	NE	ND ON	QN	Q.	0.510	1.00	QX	QN	2
Trichlorofluoromethane	3400	NΕ	NO	ND	Q	QX	QN QN	Ð	2	QX
1,1-Dichloroethene	•		ND CM	QN	4.1P	QN	0.11P	0.11P	0.11P	370P
1,1-Dichloroethane	20	N E	Q.	0.450	0.81P	QN	QN	N Ox	Q	d67
Total 1,2-Dichloroethene	16	NE	NO ON	QN.	0.72P	QN	Q	QN Qu	QN QN	34P
Chloroform	100	100	Q.	Q.	QN	QN	2	S	N Q	QN
1,2-Dichloroethane	1	2	ND	QN QN	QN	QN	Q	QN.	QN	130P
1,1,1-Trichloroethane	200	200	QN	CINI	3.9P	QN	0.33P	ND CM	QW.	12P
Carbon tetrachloride	s	2	χΩ	Q	2	QN	QN	QX QX	Q	æ
Bromodichloromethane	100	100	NO	Q	Q	Q	QN	Q	QN	QN
1,2-Dichloropropane	10	NE	ΩN	Q.	Q	QN	QN	ND	QN	QX.
Trans-1, 3-dichloropropene	NΕ	ΝE	Q	Q	Q	Q	Q	Q	£	Q.
Trichloroethene	۰	2	ON	NO ON	1.4P	QN	ND	QN	QN.	550P
Dibromochloromethane	100	100	QN	2	Q.	Q	QN	Q	Q	QN
1,1,2-Trichloroethane	100	NE	ND	Q	Q	QN	QN	Q.	QN	Q
cis-1,3-Dichloropropene	87	ΝE	ND	£	QN	QN	QN	Q.	QN	Q.
2-Chloroethylvinyl ether	N.	NE	QN	QN	Q	QN	QN	Ð	Q	Q
Bromoform	100	100	QN.	9	ND ON	QN	Q	Q	QN	QN
1,1,2,2-Tetrachloroethane	NE	NE	ND Q	Q.	QN	Q	Q.	Q.	Q	QN
Tetrachloroethene	4	NE	S	QN.	1.4P	QN	ND	Q.	Q.	Q
Chlorobenzene	30	NE E	QN	2	Q	Q	Q	QN	Q	QN.
1,3-Dichlorobenzene	130	NE	QN	QN	ND ON	QN	QN	Q.	Q.	QN
1,2-Dichlorobenzene	130		9	QN	Q	Q	Q	QN CN	QN	17P
1,4-Dichlorobenzene	(TOG) 0:2	NE.	Q.	ND	ND ON	Q.	Q	QN.	QN	ND
1,1,1,2-Tetrachloroethane	NE	NE	QN	ND	QN	QN	QN QN	ND	ND ON	QN
ALL UNITS ARE ug/1 MW = Monitoring Well			RADIAN = Rad	**************************************	on. Sacrament	01	N) = Notbing	**************************************		
				= Radian Analytical Services, Sacramento	1 Services,	Sacramento		* Analysis confirmed in second column analysis	In second colu	umn analysis
			⊃ ⊭	Unconfirmed, second column not requested	column not	requested	LOQ = Limit of	LOQ = Limit of quantitation P or PC = Identity previously confirmed	on Susiv confirm	
							NE = Not established	ablished	- (- C	,

TABLE 1-29. (continued)

	CBO	U.S.EFA				MILLI NOTIFIED			
Parameter	Action Level	Primary MCL	MM-88	M4-89	MM -90	MW-91	MW-92	MW-104	MW-105
Ground Water Zone		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SHALLOW	SHALLOW	SHALLOW	SHALLOW	SHALLOW	DEEP	DEEP
Date Sampled			01/17/89	01/16/89	01/16/89	01/13/89	01/17/89	01/20/89	01/17/89
Sampled By			PADIAN	PADTAN	RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Apalyzed			01/20/89	01/20/89	01/20/89	01/19/89	01/20/89	01/27/89	01/20/89
1 a b			SAC 24.0	SAC	SAC	SAC	SAC	SAC	SAC
F. 4. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5.			2	2	2	2	2		2
Lab Analysis									
Chloromethane	Ä	Ξ.	ND CN	ND ON	QN	QN	ND	QN	
Bromomethane	æ	E	Q	NO	QN	Q	QN	Q.	QN QN
Vinyl chloride	7	-	QX	CN	QN	Q	QN	QN QN	QN.
Chloroethane	NE	NE	QN	QN	QN	Q	QN	QN	CN.
Methylene chloride	07	N.	ON	QN	QN	0.52C	QN.	QN.	QN
Trichlorofluoromethane	3400	NE	QN	Q.	QN	Q.	Q	Q	QN.
1,1-Dichloroethene	9	,	ON CO	6.2C	QN	3.20	Q	Q	QN
1,1-Lichloroethane	20	NE	QN	QN	QN	Q	Q	Q	QX.
Total 1,2-Dichloroethene	16	NE	QN Qu	Q.	QN	0.14C	0.55P	QN.	Q
Chloroform	100	100	QN QN	QN	QN	Q	Q	2	CN
1,2-Dichloroethane	1	5	ND	QN	Q	QN	Q	Q.	QN
1.1,1-Trichloroethane	200	200	Q	ND	QN	QN	Q	Q.	QN
Carbon tetrachloride	5	2	Q	QN	QN	2	Q	Q.	ND
Bromodichloromethane	100	100	ON	QN	QN	Q	Q.	2	ND
1,2-Dichloropropane	10	NE	Q	QN	Q	2	Q	QN Q	QN
Trans-1, 3-dichloropropene	NE	NE	Q.	QN	NO	Q.	Q.	QN	QN
Trichloroethene	5	2	Q	Q	Q	76·4	2.7P	Q	ND
Dibromochloromethane	100	100	Q.	QN	Ω	Q.	Q.	2	QN
1,1,2-Trichloroethane	100	NE	£	C.	Q	2	QN	Q	QN
cis-1,3-Dichloropropene	87	NE	Q	QN	QN	2	Q	2	Ĉ.
2-Chloroethylvinyl ether	NE	NE	ND	ND	QN	2	Q	2	ND CM
Bromoform	100	100	QN Qu	Ð	Q.	£	Q	Q	ND ON
1,1,2,2-Tetrachloroethane	NE	NE	Q.	Q	ND Q	2	2	Q.	QN.
Tetrachloroethene	4	NE	ND QN	Q	Q	2	<u>a</u>	2	UD
Chlorobenzene	30	NE	QN QN	Q	QN	2	2	2	ND
1,3-Dichlorobenzene	130	NE	QN	QN	QN	Q	£	2	QN.
1,2-Dichlorobenzene	₹30	NE	QN	QN	Q	Ş	Q	ND	ON
1,4-Dichlorobenzene	(LOQ)0.5	S NE	QN.	QN	QN	Q	QN	Q	ND
1,1,1,2-Tetrachloroethane	NE	Ξ	ND	QN.	QN	QN	ON	QN	ON
ALL UNITS ARE ug/l	55 11 11 11 11 11 11 11 11 11 11 11 11 1	ii If II II II II II II	RADIAN = Ra	dian Corporat	Radian Corporation, Sacramento	ıt o	ND = Nothin	Nothing detected	
•			Ц	dian Analytic	Radian Analytical Services, Sacramento	Sacramento	C = Analys	is confirmed	m Analysis confirmed in second column analysis
							LOQ = Limit Por PC = I	Limit of quantitation C = Identity previou	<pre>nit of quantitation = Identity previously confirmed</pre>

MASTER LOG OF WELLS SAMPLED FOR METHOD 8020 COMPOUNDS FOR AREA D AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROCRAM, JANUARY THROUGH MARCH 1989, MCCLELLAN AFB TABLE 1-30.

1

				网络骨骨性线线 医阿拉拉耳氏 医多种性 医多种性 医多种性 医多种性 医多种性 医多种性 医多种	Į	, 마니 맛 있네 바 마니 내 바 사 에 바 내 내 내 내 내 내 내 내 내 내 내 내 내 내 내 내 내 내				
DBS U.S.I. Action Prim	DHS Action	U.S.EPA Prlmary P	EW-73	EW-73	EN-84	WELL NUMBER EW-84	MW-10	MW-11	MW-12	MU-14
Ground Water Zone Date Sampled Sampled By Date Analyzed Lab Field Analysis	:		02/01/89 RADIAN 02/03/89 SAC	03/01/89 RADIAN 03/06/89 SAC	01/10/89 RADIAN 01/12/89 SAC FDA	01/10/89 RADIAN 01/12/89 SAC FDB	SHALLOW 01/25/89 RADIAN 01/30/89 SAC	SHALLOW 01/31/89 RADIAN 02/02/89 SAC	SHALLOW 01/25/89 RADIAN 01/30/89 SAC	SBALLOW 01/26/89 RADIAN 01/31/89 SAC
/1 /1 Well Well	30 NE 30 NE 130 NE 130 NE (LOQ) 0.5 NE 7 5 680 NE 100 NE NE NE NE NE NE NE NE NE NE NE NE NE	NE N	ND SAC = 8	ND N	ND CO ND	ND N	ND ND 140P ND	ND N	ND N	ND

	DHS	U.S.EPA				WELL NUMBER	
Parameter	Action Level	Primary MCL	MH-15	MW-57	MW-58	MW-89	Hu-91
Ground Water Zone	1 1 1 1 1 1 1 1	/ 	SHALLOW	MIDDLE	DEEP	SHALLOW	SHALLOW NOTINE
Sampled By			RADIAN	RADIAN	RADIAN	RADIAN	RADIAN
Date Analyzed			01/30/89	01/11/89	01/11/89	01/20/89	01/19/89
Lab Field Analysis Lab Analysis			S A C	S A C	SAC	SAC	SAC
Chlorobenzene	30	ı	ON	QN	ND CN	ND ND	QX
1,3-Dichlorobenzene	130		QN.	QN	ND	QN	ON
1,2-Dichlorobenzene	130		Q	QN	Q	QN	QN
1,4-Dichlorobenzene	(F0Q)0.	5 iiE	QN	ON	Q	NO.	ND
Benzene	۲.		Q	QN.	QN.	QN	ND
Ethylbenzene	089	NE	£	QN	QN	QN	CN
Toluene	100	N.	QN	S.	QN.	QN	QN
Total Xylenes	N Ei	Z E	QN	QX	QN	Q X	ND .
ALL UNITS ARE ug/l		***************************************	4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			11 14 11 11 11	
MW = Monitoring Well			RADIAN = Rac	dian Corporat	RADIAN = Radian Corporation, Sacramento	to	ND = Nothing detected
			SAC = Rac	ilan Analytic	Radian Analytical Services, Sacramento	Sacramento	LOQ = Limit of quantitation NE = Not established

TABLE 1-31. MASTER LOG OF WELLS SAMPLED FOR METHOD 8240 COMPOUNDS FOR AREA DAND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

County Water Zone County	Parameter	DHS Action Level	U.S.EPA Primary MCL	WELL NUMBER	
## PADIAN			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		!
## ND 1/04/89 SAC NE NE ND ND ND ND ND ND ND	eromy water 700e				
NE NE ND ND ND ND ND ND ND	Date Sampled			01(05/89	
ACC NE NE ND NE NE ND NE NE ND NE NE ND	Sampled By			CALLAN	
## NE NE ND NE NE ND NE NE ND NE NE ND NE NE ND NE NE ND NE NE ND NE NE ND NE NE ND	Date Analyzed			11114.00	
NE NE ND NE NE ND NE NE ND NE NE ND NE	D 1			SAC	
NE NE ND	Field Analysis Lab Analysis				
NE NE ND NE ND	Chloromethane	3	Z.	QX	1
de	Bromomethane	N	NE	QZ	
de	Vinyl chloride	7	1	2100	
de 40 NE ND rethane 3400 NE ND rethane 3600 rethane 16 NE 1100 rethane 16 NE 1100 rethane 20 ND ND ride 5 S ND ride 6 S ND ride 6 S ND ride 70 J ZOO 810 ride 5 S ND ride 70 J ZOO 810 ride 6 S ND ride ND ride ND ride 70 J ZOO 810 ride 70 J ZOO 810 ride 8 ND ride N	Chloroethane	NE	NE	GN GN	
tcethane 3400 NE NA ne 6 7 9900 ne 20 NE 800 toethene 16 NE 1100 ne 1 5 ND thane 100 100 ND tride 5 5 ND hane 100 NE ND tride 100 NB	Methylene chloride	07	NE	QN.	
ne 6 7 9900 ne 10 NE 100 no 100 ND ne 100 ND ne 100 ND hane 100 ND hane 100 NE ND propene NE NB hane 100 NE ND hane 100 NB hane	Trichlorofluoromethane	3400	u Z	47	
ne 20 NE 800 roether 16 NE 1100 ne 1 5 ND refide 5 5 ND rane 100 ND roproper NE ND roproper NE ND roproper NE ND rocethane NE NB rocethane NB	1,1-Dichloroethene	•	7	0660	
roethene 16 NE 1100 thane 100 ND thane 100 ND ride 5 5 ND ride 100 NE ND ropropene NE NE ND ropropene 87 NB ride ND ropropene 87 NB ride ND	1,1-Dichloroethane	20	w Z	009	
ne 100 ND thane 20.3 200 810 ride 5 5 ND hane 100 ND hane ND	Total 1,2-Dichloroethene	16	N N	100	
thane 200 810 thane 200 810 tride 5 5 ND hane 100 ND and 100 ND hane 100 ND hane 100 ND hane 100 ND thane 100 ND propene 87 NE ND ylether NE NE ND oroethane NB oroe	Chloroform	100	100	9	
thane 100 ND	1,2-Dichloroethane	1	200	99	
Tride	1,1,1-Irichloroethane	70.	700	010	
ane 100 NE ND ropropene NE NE ND hane 100 ND hane 100 ND hane 100 ND propene 87 NE ND yl ether NE NE ND oroethane NE NE ND oroethane NE NE ND 100 NE ND 7 5 ND 680 NE ND 100 NE ND 100 NE ND 100 NE ND 7 5 ND 680 NE ND 100 NE ND NE NE S800 NE NE S800 NE NE ND	Carbon retrachloride	001	000	200	
Abne 100 ND	1 2 Dich concernance	201	001	7 5	
hane 100 ND NE ND Propene 87 NE ND Propene NE NE ND Propene NE NE ND Propene 88 ND ND Propene 89 ND ND Propene 89 ND ND Propene 89 ND ND Propene 89 ND ND ND Propene 89 ND ND Propene 89 ND ND Propene 89 ND	1,2-Dichiolopropane Trans-1 3-dichloropropane	S E	N. N.		
hane 100 ND ND NE ND Propene 87 NE ND Propene 87 NE ND ND NE ND	Trichloroethene	^	5	300	
thane 100 NE ND propene 87 NE ND ylether NE NE ND oroethane NE NE ND oroethane NE NE ND oroethane NE NE ND oroethane NE ND Oro	Dibromochloromethane	100	100	Gr.	
Propene 87 NE ND yl ether NE NE ND oroethane NE NE ND e 4 NE ND e 7 NE ND 680 NE ND 100 NE ND NE NE 1600B NE NE ND NE NE ND NE NE ND NE NE S800 NE NE ND NE NE S800 NE NE ND NE NE S800 NE NE ND N	1,1,2-Trichloroethane	100	NE	Q.	
yl ether NE NE ND 100 100 ND orocthan NE NE ND 30 NE ND 30 NE ND 680 NE ND 100 NE ND NE	cis-1,3-Dichloropropene	87	NΕ	G.	
oroethane NE NE ND oroethane NE NE ND 30 NE ND 30 NE ND 57 5 ND 680 NE ND 100 NE ND NE NE 1600B NE NE 2800 NE NE ND 1/1 Hell SAC = Radian Analytical Services, Sacramento NA = B = B = B = B = B = B = B = B = B =	2-Chloroethylvinyl ether	NE	Α. Θ.	97	
No. No. No. No.	Bromoform	100	007	22	
30 NE ND 7 5 ND 680 NE ND 100 NE ND NE NE 16000B NE NE 2800 NE NE 2800 NE NE ADIAN = Radian Analytical Services, Sacramento NA = B = B = B = B = B = B = B = B = B =	1.1,2,2-letiachiorename Terrachloreethese	1 7	1 E	5	
7	Chlorobenzene	30	N.	•	
680 NE ND 100 NE ND NE NE 1600B NE NE 2800 NE NE ND NE NE SO NE NE SO ND 11 Mell SAC = Radian Analytical Services, Sacramento NA = B = B	Benzene		. 5	Q _A	
NE NE 1600B NE NE 2800 NE NE ND NE NE ADIAN = Radian Analytical Services, Sacramento NA = B = B	Ethylbenzene	680	NE	UN UN	
NE NE 16000B NE NE 2800 NE NE ND /I Well Sacramento ND = SAC = Radian Analytical Services, Sacramento NA = B = B	Toluene	100	N.E.	GP.	
NE NE ND NE NE 2800 NE NE ND 1	Acetone	NE	NE	16000B	
utanone NE NE 2800 yl acetate NE NE ND , UNITS ARE ug/1 Extraction Well SAC = Radian Analytical Services, Sacramento NA = B = NF	Carbon disulfide	3.	NE	Gh.	
yl acetate NE NE ND UNITS ARE ug/1 Extraction Well SAC = Radian Analytical Services, Sacramento NA = B = NA	2-Butanone	NE	NE	2800	
. UNITS ARE ug/l RADIAN = Radian Corporation. Sacramento ND = Extraction Well SAC = Radian Analytical Services, Sacramento NA = B = B NF = Radian Analytical Services Sacramento NA = RADIAN = R	Vinyl acetate	Ω	Σ.	Ox	1
= Extraction Well RADIAN = Radian Corporation, Sacramento ND = SAC = Radian Analytical Services, Sacramento NA = B = B	ALL UNITS ARE ug/1				
 (1)				AN = Radian Corporation, Sacramento ND = = Radian Analytical Services, Sacramento NA = =	
				 	edited

Parameter Level MCI Ground Water Zone 01/05/89 Date Sampled NADIAN Sampled By RADIAN Date Analyzed SAC Field Analyzis SAC Field Analyzis Lab Analyzis Lab Analyzis NE NE Peakanone NE NE 4-Methyl-2-pentanone NE NE Styrene NE NE Total Xylenes NE ND All UNITS ARE ug/l NE ND All UNITS ARE ug/l ND Nothing detected Extraction Well ND Nothing detected	EW-73	
	01/05/89	
	KADIAN	
	01/14/89 SAC	
	Q.	
	QN.	
Z	CN CN	
NAL LANG	DANTAN - Dadion Companyion Comments	ND = Nothing detected
	ramento	- Not established

TABLE 1-32. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR AREA D AND ADJACENT ON-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, MCCLEILAN AFB

DEEP 01/17/89
RAD I AN 02/06/89
•
;
0.016B
0.047B

DMBLE 1-33. MISTER LOG OF WELLS SAMPLED FOR NEETED 7196 FOR AREA D AND ADJACENT CN-BASE AREAS, GOLUNDANDER SAMPLING AND ANALYSIS FROGRAM, JANLARY THROUGH MARCH 1999, HAJELLAN AFB

	8				TEM	WELL NAMES
Parameter	Act lon Level	Primary 54-87 NCL	18 -1 81	7 ±	M4-105	
Ground Water Zone			8	MOTIMES	1000 2017	
Sempled By			RADIAN	RADIAN	PADIAN	
Date Analyzed			01/06/89	01/26/89	01/18/89	
4			Sec	Sec	SKC	
Field Amalysis Lab Amalysis						
Chromium VI		0.050 NO	2	2	9	
ALL UNITS ARE mg/l MW = Monitocing Well EM = Extraction Well			RADIAN = R	adian Corpora adian Aralytis	RADIAM = Radian Corporation, Secremento SAC = Radian Aralytical Services, Secremento	NO = Northing derected NOT = Not established

TABLE 1-34. MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR THE NORTHWEST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLEILAN AFB

	DHS	U.S.EPA				WELL MUMBER		
Parameter	Action Level	Primary MCL	MW-1001	MW-1002	MW-1003	MW-1004	MW-1005	MW-1019
Ground water Zone			DEEP	SHALLOW	MTDDLE	SHALLOW	SHALLOW	SHALLOW
Det 6:			00/11/10	00,00,00	001 - 11 - 10	20,11,00	00,01,10	01/11/10
Contract of the Contract of th			01/1/10	60/61/10	60////0	20/11/10	01/17/02	10 101 110 CO 101 CO
in the same of the			KALLAN.	KALLAN	SALLAN.	KALLAN	KALUAN	KALLAN
Date Analyzed			01/20/89	01/19/89	01/20/89	01/23/89	01/20/89	01/31/89
q			SAC	SAC	SAC	SAC	SAC	SAC
Field Analysis								
Lab Analysis								
Chloromethane	ME.	X.	CX.	QX	Q.	QX	Q.	QX
Bromomethane	X.	NE	£	Q	QN	Q	Q	QN
Vinyl chloride	7	-	2	£	Q	S	QN	QN
Chloroethane	NE	NE	Q.	£	æ	Q.	QN	QN
Methylene chloride	0,4	NE	Q.	NO QN	QX	æ	Œ.	QX.
Trichlorofluoromethane	3400	NE	Ę	Q.	QN	QN	QN	QN
1,1-Dichloroethene	9	7	£	0.490	Q	7.0P	20C	QN
1,1-Dichloroethane	20	NE	QN	QN	æ	1.0P	1.70	1.60
Total 1,2-Dichloroethene	16	NE	Q	Q.	Ę	0.34P	1.30	0.37C
Chloroform	100	100	Q	QN	Q	QN QN	Q	0.120
1,2-Dichloroethane	1	5	QN	QN	QN	0.22P	0.610	ND
1,1,1-Trichloroethane	200	200	Q	QN	Q.	Q.	0.26C	QX.
Carbon tetrachloride	s	5	Ð	ND ON	ND	QN	ē	Đ.
Bromodichloromethane	100	100	QX.	ND CN	Q.	ND	QN	QN ON
1,2-Dichloropropana	10	N.	Ş	QN	QN QN	æ	QN	£
Trans-1,3-dichloropropene	NE	NE	Q	Q.	Q	Q	Q.	SE SE
Trichloroethene	s	5	Q	0.36C	£	1.3P	5.2C	1.20
Dibromochloromethane	100	100	£	Q.	Q.	QN.	QN	Q
1,1,2-Trichloroethane	100	NE	Q.	æ	QN	Q	QX	Q
cis-1,3-Dichloropropene	87	NE	£	QN	QN	Q	QX	QN.
2-Chloroethylvinyl ether	NE	NE	NO CM	Q	æ	Q	QN	Q
Bromoform	100	100	Ş	Q	S S	QN QN	QN	Q.
1,1.2,2-Tetrachloroethan	NE	NE	Q	Q	Q.	Q	QX	QN.
Tetrachloroethene	4	NE	Q.	QN	QN Qu		ę	0.500
Chlorobenzene	30	NE	NO ON	QN	QN QN	QN QN	ND CM	QN
1,3-Dichlorobenzene	130	NE E	QN	QN	Q.	QN QN	Q	ON ON
1,2-Dichlorobenzene	130	NE	QN	QN	ND	QN	SE CE	CK.
1,4-Dichlorobenzene	(L0Q)0.5	5 NE	ND QN	QN	QN	N Ox	£	ON ON
1,1,1,2-Tetrachloroethane	NE	NE	QN.	QN	QN QN	ND	QN	UN
ALL UNITS ARE ug/l MW = Monitoring Well			W =	dian Corporat	= Radian Corporation, Sacramento	to	! _	* Nothing detected
			SAC = Ra	idian Analytic	Radian Analytical Services, Sacramento	Sacramento	_, ₩	C = Analysis confirmed in second column analysis LOQ = Limit of quantitation P or PC = Identity previously confirmed
							NE = Not es	 Not established

TABLE 1-35. MASTER LOG OF WELLS SAMPLED FOR METHOD 6010 FOR THE NORTHWEST AREA, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, MCCLELLAN AFB

	DHS Action	U.S.EPA Primary	MM-1004	WELL NUMBER	
Parameter	Level	TAL	,		
			SHALLOW	SHALLOW	
Date Sampled			01/11/89	01/18/89	
Sampled By			RADIAN	RADIAN	
Date Analyzed			02/06/89	01/27/89	
Lab			SAC	SAC	
Field Analysis					
		* ;			
Ant Laony	Z.	Z E	2	QN	
Arsenic	Æ	0.050	Q¥	QN	
Beryllium	¥	N.	ě	QX.	
Cadmitum	Z	0.010	Q	Q.	
Chromium	NE	0.050	0.013	0.008	
Copper		NE	Q.	QX	
Lead	Æ	0.050	QN.	Đ.	
Nickel	Z	NE	0.023	CN	
Selenium	N.	0.010	QN.	QN	
Silver	N.	0.050	Q.	QN.	
Thallium	Z.	NE	Q	QN	
Zinc	Z.	NE	0.0358	0.006B	
Calctum	æ	NE	138	38B	
Iron	RE	NE	0.029B	0.0218	
Magnesium	NE	NE	8.8	26B	
Sodium	XE	NE	188	30B	
Aluminum	NE	NE	QX	Q	
Boron	Z.	NE	0.031	0.055	
Barium	NE	1.0	0.034	0.11	
Cobalt	XE	NE	KD QX	QN	
Potassium	NE	NE	Q.	CN.	
Manganese	NE	NE	QX	QN	
Molybdenum	NE	NE	Q.	QN	
Silicon	NE	NE	38B	39	
Vanadlum	NE	NE	0.059	0.023	
ALL UNITS ARE mg/l		# h to h t	RADIAN = Rac	RADIAN = Radian Corporation, Sacramento SAC = Radian Analytical Services, Sacramento	ND = Nothing detected B = Compound detected in laboratory blank - not edited NF = Not setablished

TMBE 1-36. INSTER LOS OF WELLS SAMPLED ROR HETHED 7196 FOR THE NORTH-EST AREA, GROUNDWITER SAMPLING AND AWAYSIS PROGRAM, JANUAYY THROUGH MARCH 1999, HGJELLAN ARE

Paremeter	DES Action Lovel	U.S.EPA Primery MZ.	U.S.BPA WELL NUMBER Primary M4-1019 M2.
Ground Water Zone			WILLIAM STATE OF THE STATE OF T
Date Sempled			01/18/89
Sempled By			RADIAN
Date Analyzed			01/19/89
4			ONS.
Field Analysis			
Lab Analysis			
Ceronian VI	2	O. 050 NO	Q
ALL UNITS AND any/1			
Mv = Monitoring Well			
			SAC = Radian Analytical Services Services Services (Services Services)

TABLE 1-37. MASTER LOG OF WELLS SAMPLED FOR METHOD 8010 COMPOUNDS FOR OTHER OM-BASE AREAS, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, JANUARY THROUGH MARCH 1989, McCLELLAN AFB

	SHQ	U.S.EPA	HELL NUMBER	
Parameter	Action	Primary	M4-24D	
Ground Water Zone	1 1 1 1 1 1	,	MIDDLE	; ! ! ! ! !
Date Sampled			01/13/89	
Sampled By			RADIAN	
Date Amalyzed			01/19/89	
Field Analysis				
Lab Analysis		1		
Chloromethane	RE	NE	CA.	
Brosomethane	NE	NE	ON ONE	
Vinyl chloride	2	1	ON ONE	
Chloroethane	Ä	N.	ON The state of th	
Methylene chloride	07	NE	0.54C	
Trichlorofluoromethane	3400	NE	MD.	
1,1-Dichloroethene	9	7	MD	
1,1-Dichloroethane	20	Z.	ND ND	
Total 1,2-Dichloroethene	16	N.	MD	
Chloroform	100	100	ON CONTRACT	
1,2-Dichloroethane	-	'n	ND AND	
1, 1, 1-Trichloroethane	200	200	0.25c	
Carbon tetrachloride	٠. ا	so :	QN.	
Bromodichloromethane	100	100		
1, 2-Dichloropropane	ខ្ម	¥ ;		
Trans-1, 3-dichloropropene	N.	NE.	Q.W.	
Trichloroethene	,	2		
Ulbromochioromethane	007	00 4		
1,1,2-1:1chiotocchane	100	S 5	Ú V	
2-Chloroethylvinyl ether	S S	, E		
Bromoform	100	100	!! Q	
1,1,2,2-Tetrachloroethane	NE	NE	QN CIN	
Tetrachloroethene	4	NE	QN	
Chlorobenzene	30	NE	ON ON	
1,3-Dichlorobenzene	130	NE	ON ON	
1,2-Dichlorobenzene	130	NE	ND ND	
1,4-Dichlorobenzene	800	5 NE	ND	
1,1,1,2-Tetrachloroethane	NE	N N		
ALL UNITS ARE ug/1				
MW = Monitoring Well			AN * Radian Corporation, Sacramento ND **	
			SAC = Radian Analytical Services, Sacramento C = Analysis confirmed in second column analysis	nalysis
			NE NET COLOR	
			ľ	

2.0 EVALUATION OF TWO OF THE INTERIM REMEDIAL MEASURES

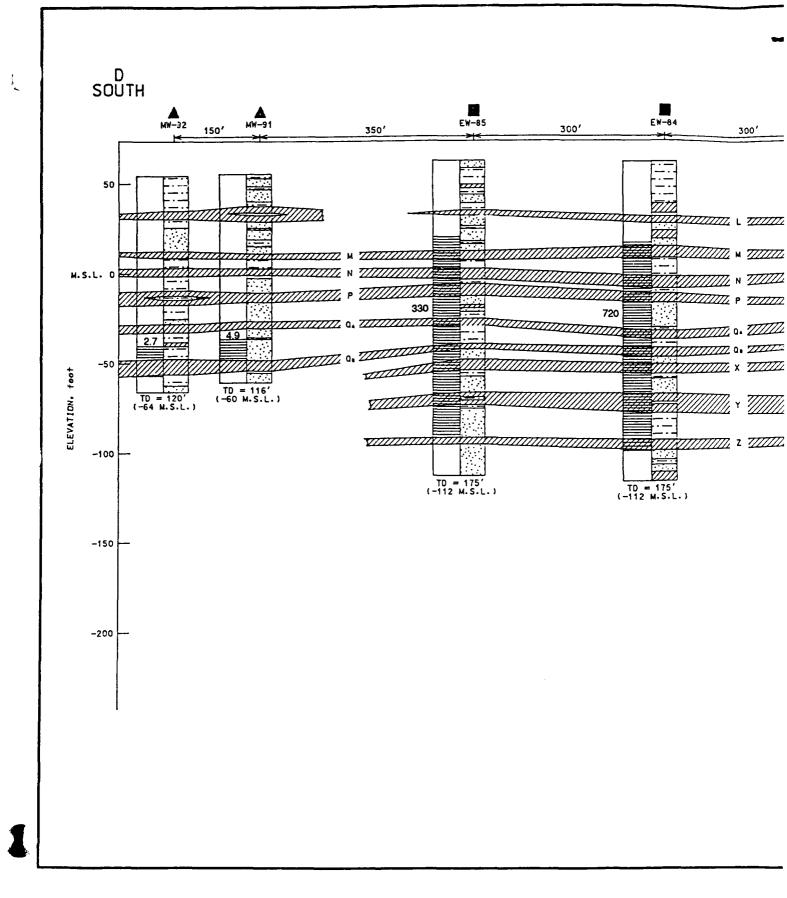
Three interim remedial measures have been implemented by McClellan Air Force Base (AFB) as a result of the findings of the Groundwater Sampling and Analysis Program and other Remedial Investigation/Feasibility Studies (RI/FS) activities. These remedial measures include providing municipal water hookups to approximately 500 residences to the west, north and south of the base, installation of a synthetic liner/cover, clay cap and an extraction system in Area D, and installation of a groundwater extraction system in Area C. The residences were connected to the municipal system in the spring of 1986. Pumping of the Area D extraction system began in March 1987 and pumping of the Area C extraction system began on 29 August 1988: Both systems were installed to control groundwater flow and thus control the movement of contaminants away from the area. The Area C and D extraction systems are discussed below.

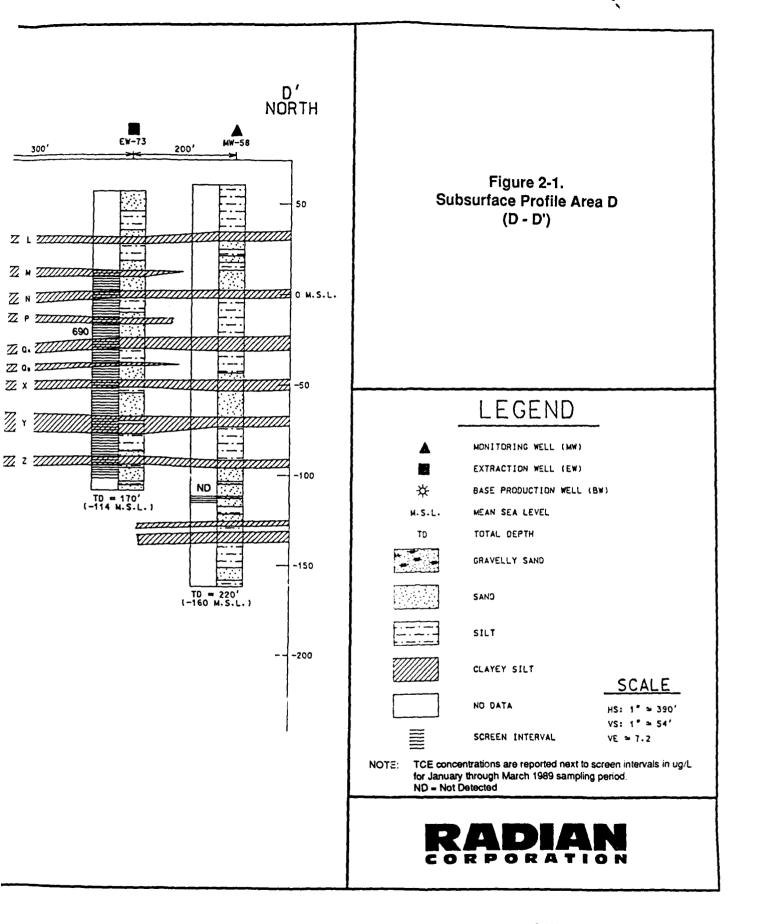
2.1 Area D Extraction System

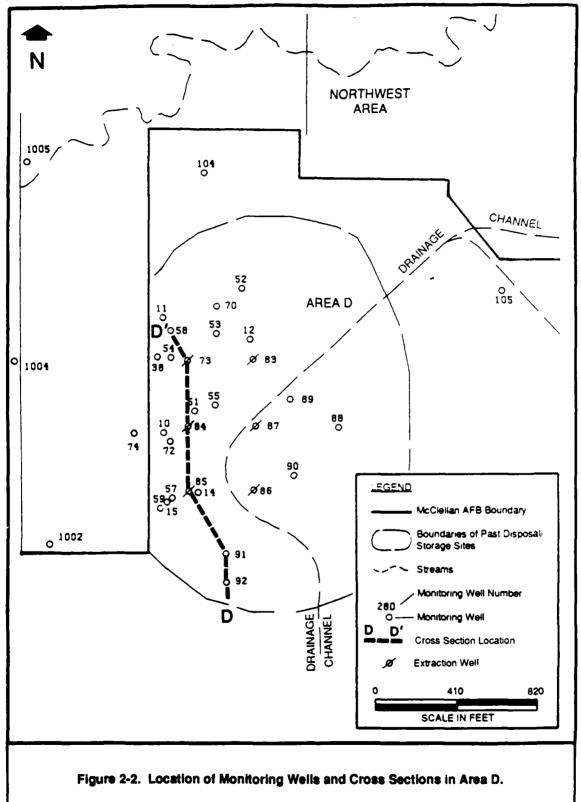
The Area D extraction system consists of six extraction wells located in the area of a sludge/waste pit that has been excavated and capped. The wells are continuously pumped and collectively produce approximately 77 to 80 gallons per minute (gpm). The extracted water is then pumped via an aboveground pipeline to the Groundwater Treatment Plant (GTP) where the water is treated to remove contaminants.

The six extraction wells are all screened from 40 to 160 feet below ground surface (bgs) or in the shallow and middle monitoring zones. As shown on the geologic cross section (Figure 2-1), at this depth beneath Area D there are alternating sands, silts and clayey silts. The cross section as shown on the surface trace (Figure 2-2) traverses Area D from north to south and includes three of the six extraction wells.

The purpose of the extraction system is to isolate and contain contaminants within Area D (McLaren Environmental Engineering, 1987). To accomplish this goal, McLaren recommended that the evaluation of the effectiveness of the extraction system be based on gradient controls between







specific pairs of wells. The specified gradients were based on head differences of 0.2 feet between the well pairs. McLaren also recommended pumping at the minimum flow rate of 78 gallons per minute (gpm), which would result in a 3-foot drawdown in the monitoring wells after one year of pumping. McLaren specified the 78 gpm flow rate to minimize the decline of groundwater levels, thereby prolonging the usefulness of the extraction system.

the effectiveness of the Area D extraction system is evaluated below based on McLaren's gradient criteria. Long-term changes in contaminant concentrations from several monitoring wells were also reviewed to examine the effect of the extraction system on water quality.

Water-Level Data

Water-level data for the McLaren-specified well pairs were measured in late December 1988 and early January 1989 prior to groundwater sampling. These data were used to calculate head differences and gradients. Table 2-1 presents the well pairs and calculated head differences and gradients. As shown in the table, the extraction system is operating at a rate that meets the gradient criteria established by McLaren Engineers. The potentiometric surface maps of Area D (Plates 3 and 5) also illustrate the effects on the groundwater flow directions from pumping of the Area D extraction system. The maps show contours of equal head; groundwater flow is perpendicular to these contours in the direction of decreasing head. In both the shallow and middle monitoring zones, flow is toward the extraction wells. Water level data were obtained from Metcalf & Eddy in December 1988 and were used to calculate head differences and gradients for well pairs MW-54 & MW-76, MW-72 & MW-74, and MW-91 & MW-92 (personal communication, Metcalf & Eddy, December 1988). It appears that three Radian water-level measurements were problematic in MW-74, MW-76, and MW-91 when compared to Metcalf & Eddy's December 28, 1988 waterlevel measurements. Therefore, the Metcalf & Eddy data were used to calculate gradients in the three previously noted well pairs.

TABLE 2-1. HEAD DIFFERENCES AND GRADIENTS OF SELECTED WELL PAIRS IN AREA D, JANUARY THROUGH MARCH, 1989

	Manitaniaa	Head Difference	Gradien	<u>t</u>
Well Pair	Monitoring Zone	(feet)	(feet/feet)	(feet/mile)
MW-53 & MW-70	Middle	NC	NC	NC
MW-54 & MW-76ª	Middle	-0.41	0.0028	15.0
MW-72 & MW-74ª	Middle	-0.59	0.0048	25.5
MW-89 & MW-88	Shallow	-0.85	0.0030	17.4
MW-90 & MW-88	Shallow	-0.83	0.0028	14.6
MW-91 & MW-92ª	Shallow	-0.25	0.0019	10.0

NC - Not calculated because water level could not be measured in MW-53.

Note: First well of the well pair is located closest to the extraction well, negative sign indicates gradient is towards the extraction well.

^a Head differences and gradients for these well pairs were calculated using Metcalf & Eddy's December 28, 1988 water level measurements.

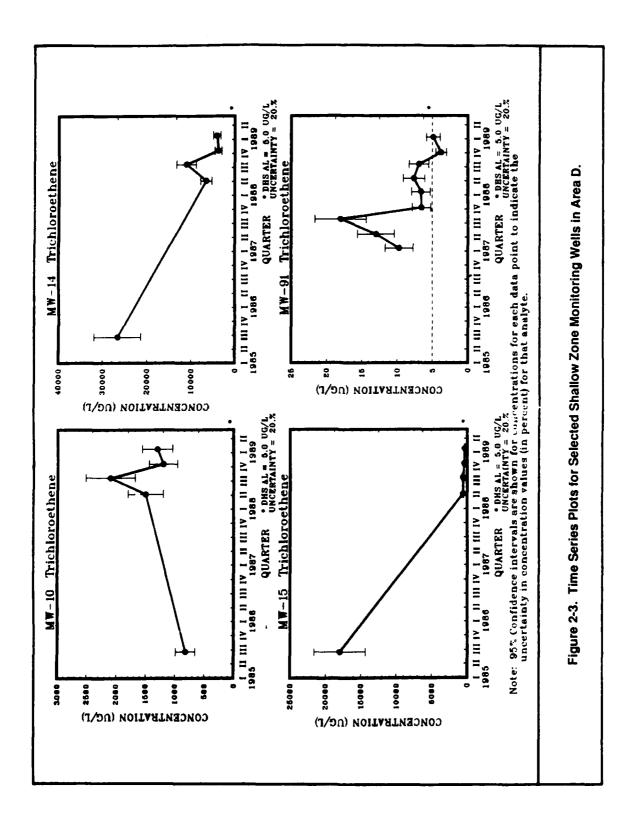
Analytical Data

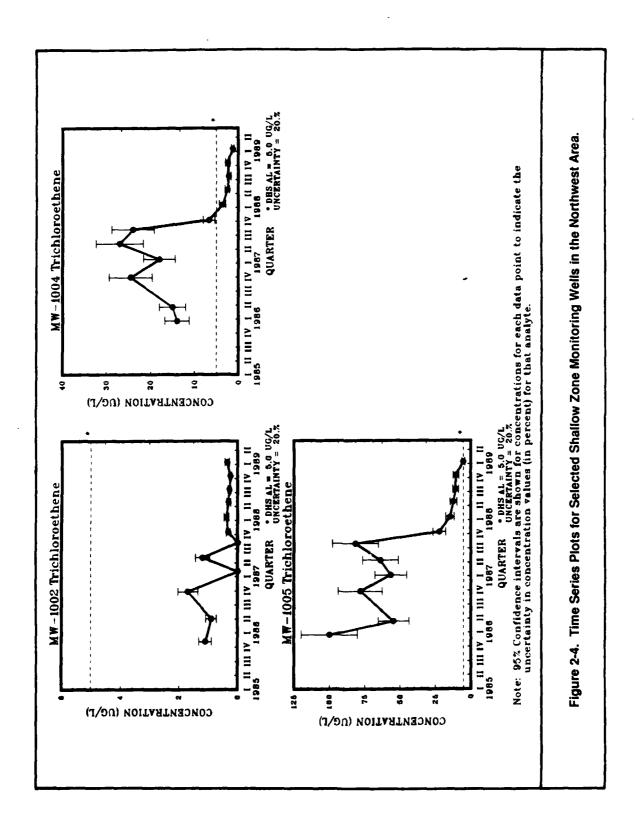
Analytical results were reviewed from shallow, middle, and deep zone monitoring wells located both on base and off base. Time series plots for 12 of the monitoring wells were prepared using Trichloroethene (TCE) data (Figures 2-3, 2-4, 2-5 and 2-6). The time series plots focus on TCE because it is the most widely detected compound in the McClellan AFB groundwater monitoring network and in Area D. The TCE data were plotted for wells with sampling history of at least three points.

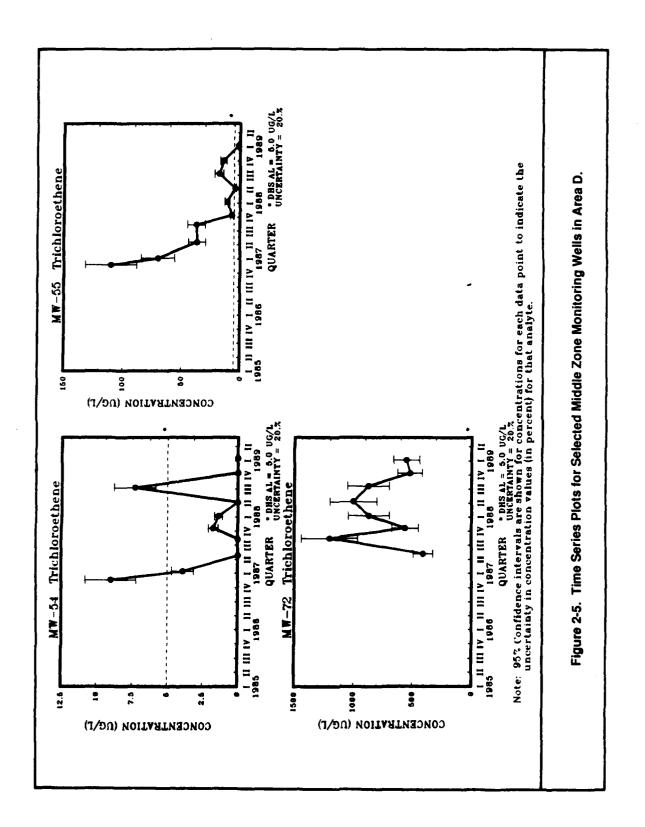
For the purpose of qualitatively evaluating the effectiveness of the extraction system, the long-term changes in TCE concentrations were reviewed for selected monitoring wells. A decreasing trend in concentrations would be expected in monitoring wells the greatest radial distance from the extraction wells, but still within the influence of the wells. The monitoring wells close to the extraction wells are expected to show greater TCE concentrations over a longer period of time because they are near the contaminant sources and are also near extraction wells that are drawing contaminated groundwater toward the wells. The time series plots for the 12 monitoring wells are evaluated below.

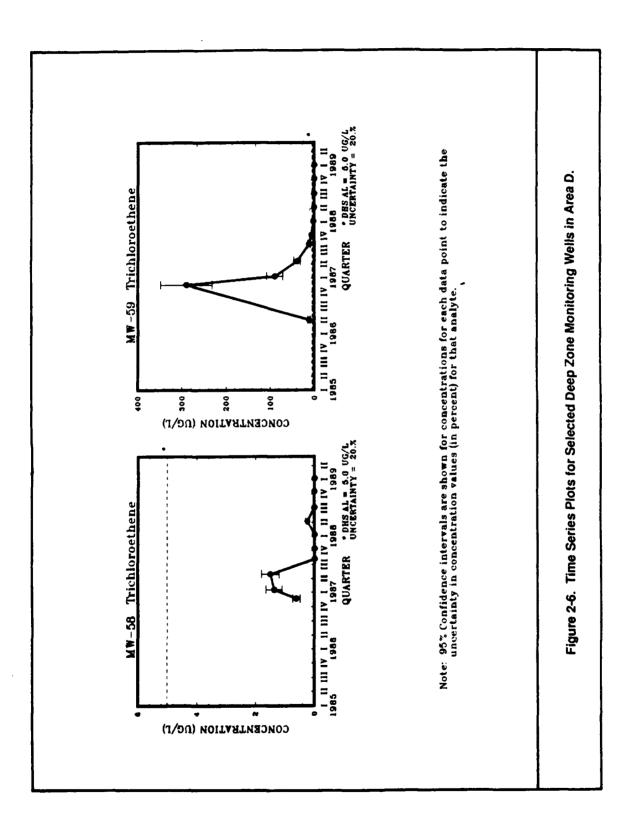
Included on each time series plot are "error bars" of ± 20 percent for each data point. The bars represent the sampling uncertainty associated with each reported concentration and are based on statistical analysis. The sampling variability is attributed to both laboratory and field procedures.

Representative time series plots were developed for four shallow zone monitoring wells located in Area D and three shallow zone monitoring wells located approximately 500 feet west of Area D. The on-base monitoring wells are MW-10, MW-14, MW-15, and MW-91 and the off-base wells are MW-1002, MW-1004, and MW-1005. The locations of these wells are shown in Figure 2-2. The time series plots for MW-10, MW-14, and MW-15 (Figure 2-3) are based on five sampling events, one in 1989, three in 1988 and one sampling event in 1985. The time series plots for these wells, except MW-10, indicate TCE concentrations during the past three sampling events are lower than in 1985.









Trichloroethene concentrations in MW-10 appear to have increased since 1988 as compared to 1985. Trichloroethene concentrations in MW-10 and MW-14 show a slight increase during this sampling period compared to the previous sampling period.

The time series plot for MW-91 (Figure 2-3) indicate increasing concentrations until Third Quarter 1987, after which TCE concentrations have decreased and leveled off. Trichloroethene concentrations in MW-91 have been below drinking water standards during the last two sampling periods. Monitoring well MW-91 as shown in Figure 2-2, is located south of the extraction system well field.

The time series plots for the three off-base monitoring wells (MW-1002, MW-1004, and MW-1005) show long-term decreases in TCE concentrations that have stabilized since the Fourth Quarter 1987 (Figure 2-4).

Overall, the time series plots for the shallow zone monitoring wells located outside the well field show decreasing trends that have leveled off in recent sampling events. Trichloroethene levels in MW-91 have decreased to below drinking water standards. The long-term trends for shallow zone monitoring wells located near the extraction wells (MW-10, MW-14, and MW-15) are not readily apparent, but appear to be stabilizing. High concentrations of TCE may continue to be detected in these wells because they are located near extraction wells that are drawing contaminated water toward them.

There are three middle zone monitoring wells in Area D for which time series plots were developed (Figure 2-5). These wells, located near the extraction wells (Figure 2-2) are MW-54, MW-55, and MW-72. Monitoring wells MW-54 and MW-55 are located close to EW-73, the extraction well with the highest contaminant concentrations. Trichloroethene has not been detected in MW-54 during the part two sampling events. Trichloroethene levels in MW-55 have decreased since 1987 and are now below drinking water standards. The time series plot for MW-72, located near EW-84, shows decreasing TCE concentrations during the second, third, and fourth sampling periods of 1988. Based

on these data, TCE levels appear to be decreasing in the three middle zone monitoring wells.

Trichloroethene concentrations over time were plotted for two deep zone monitoring wells in Area D. These wells, MW-58 and MW-59, are located northwest of EW-73 and southwest of EW-85, respectively (Figure 2-2). The time series plots for these two wells are shown in Figure 2-6. Trichloroethene was not detected in either well during the most recent sampling period. Since Second Quarter 1987, TCE has not been detected in samples from MW-58, except during the second quarter of 1988. The time series plots for MW-59 shows a concentration peak during the Fourth Quarter 1986 sampling, and then a decrease in concentration during the past nine sampling events. The TCE concentration trends for both wells suggest that contaminant concentrations in the deep zone are affected by the extraction well pumping of the shallow and middle monitoring zones. This may be due to the diluting of contaminant concentrations as uncontaminated water flows toward the extraction system.

In summary, monitoring wells in Area D have not all had the same kinds of fluctuations in TCE concentrations, which can be seen in the varied shapes of time series plots in Figures 2-3, 2-4, 2-5, and 2-6. The shallow zone monitoring wells located outside the extraction well field have shown a decrease followed by recent stabilizing of TCE concentrations. In the shallow zone monitoring wells located near the extraction wells, TCE levels have been fluctuating during the last four sampling periods. In the three middle zone monitoring wells, TCE levels appear to be decreasing. However, the statistical trend is still fluctuating. In the two deep zone monitoring wells, TCE concentrations have decreased to below detection levels. Based on water quality data, the Area D extraction system seems to be effectively removing contaminants because TCE concentrations in monitoring wells located outside the extraction well field continue to show decreasing trends.

Conclusions

The Area D extraction system was evaluated based on hydraulic gradients between monitoring wells and by long-term trends in contaminants, as

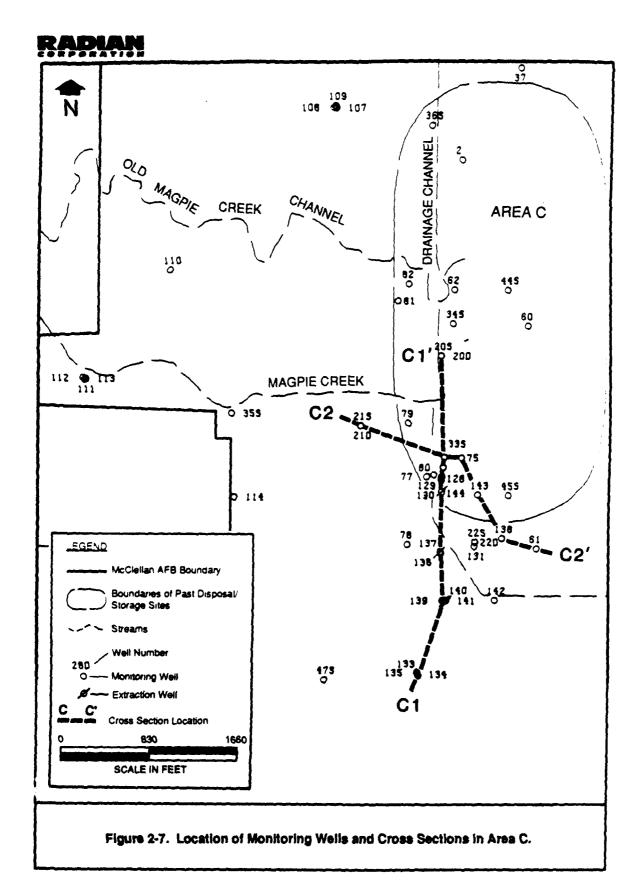
detected in shallow, middle, and deep monitoring zone wells. The Area D extraction system is being operated effectively based on hydraulic gradients recommended for specific pairs of monitoring wells. The water quality data from shallow monitoring zone wells outside of the well field do indicate that contaminant concentrations are decreasing or have stabilized since the extraction system began operating in July 1987.

2.2 Area C Extraction System

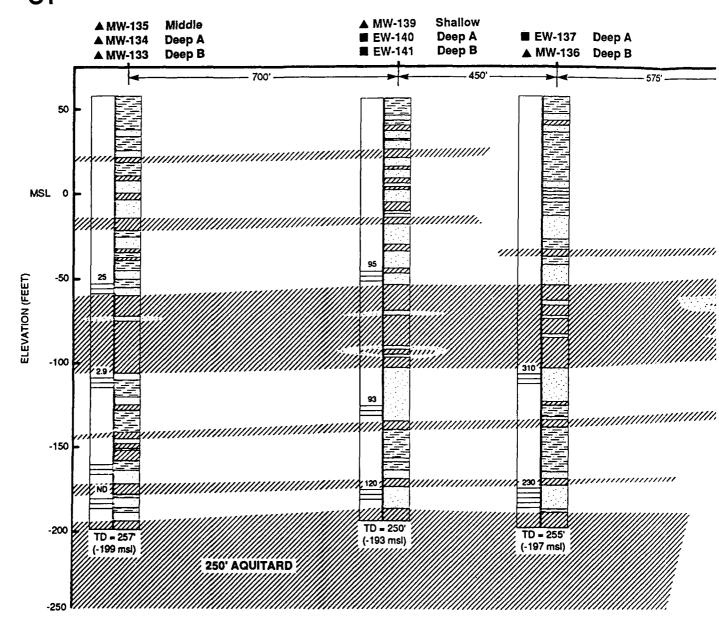
There are four extraction wells in Area C, located along a north-south line as shown in Figure 2-7. The average combined flow rate from the extraction wells in Area C is approximately 160 -gpm. The extracted groundwater is pumped via an aboveground pipeline to the GTP where the water is treated to remove contaminants.

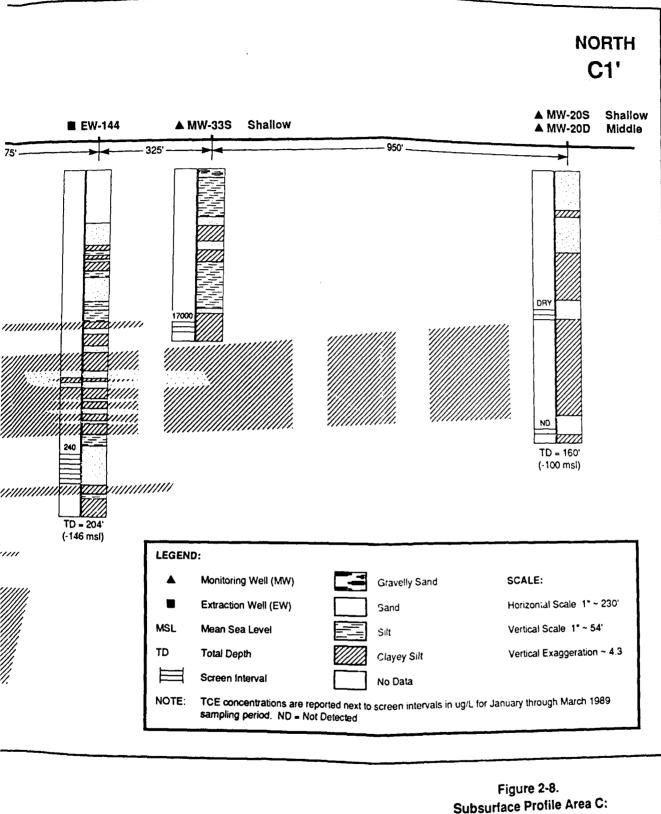
The four extraction wells in Area C are screened within three different monitoring zones. Extraction well EW-137 is screened from 162 to 172 feet bgs (deep "A" monitoring zone). Extraction Well EW-140 is screened from 180 to 190 feet bgs (deep "A" monitoring zone). Extraction Well EW-141 is screened from 230 to 240 feet (deep "B" monitoring zone). Extraction Well EW-144 is screened at two intervals from 120 to 130 feet bgs and from 165 to 185 feet bgs (middle and deep "A" zones). The geologic section beneath Area C has been illustrated on two cross sections. As shown in the south to north cross section (Figure 2-8), and the east to west cross section (Figure 2-9), most of the coarser-grained sediments do not appear to be continuous. There does appear to be a finer-grained zone that is continuous at a depth of approximately -50 to -100 ft msl. The four Area C extraction wells are screened below this zone. The locations of both profiles are shown in Figure 2-7.

To evaluate the effectiveness of an extraction system, the induced horizontal and vertical gradients can be used. In order to determine horizontal gradients, several pairs of monitoring wells are needed which are screened in the same monitoring zone, located radially outward from the

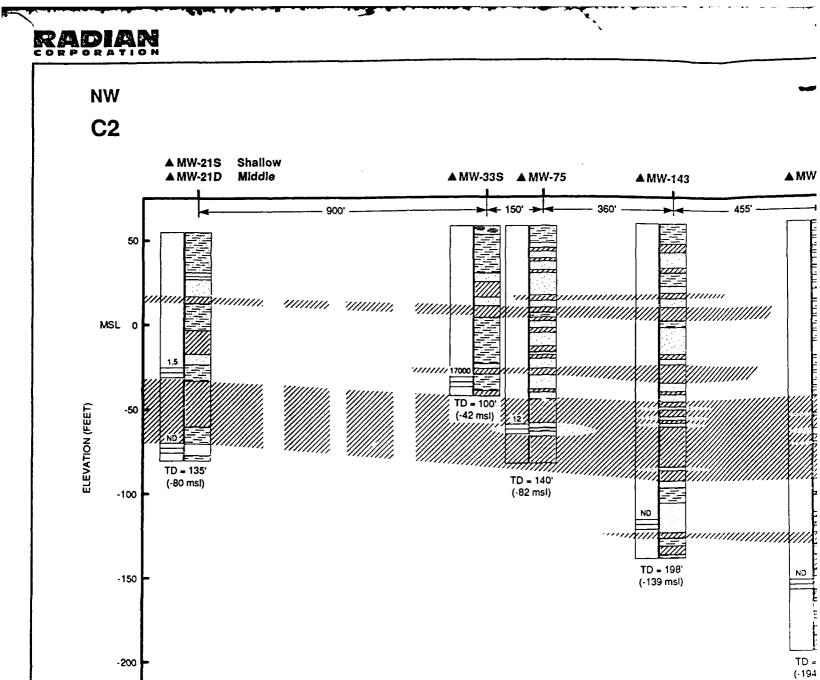








Subsurface Profile Area C: Depositional Dip Section (C1 - C1').



-250

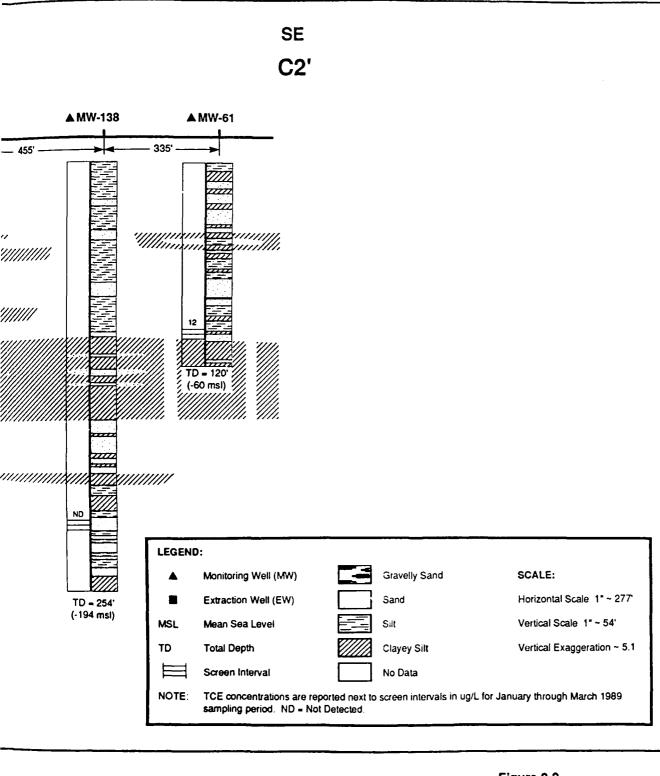


Figure 2-9.
Subsurface Profile Area C:
Depositional Strike Section (C2 - C2').

extraction wells, and perpendicular to the regional gradient. To evaluate the effect of the extraction system on vertical gradients, several pairs of wells are needed which are directly adjacent, but screened in different monitoring zones.

The number and locations of monitoring wells in Area C do not currently allow an evaluation of the extraction system effectiveness. Since precise operating specifications were not included in the extraction system report (EG & G. Idaho, 1988), the evaluation of the Area C extraction system can only focus on the changes in hydraulic head in the area. The optimum capture zone of the Area C system has not been specified. The capture zone of the wells, as currently operated, cannot be defined because there are only two pair of wells from which horizontal gradients can be calculated and none of the wells are screened in the same zone as the extraction wells. Additional wells located radially out from each extraction well are needed to define the induced gradients in each of the monitoring zones. Vertical gradients presently can only be determined at two well clusters. Thus, the effect of pumping from one monitoring zone on another monitoring zone cannot be determined, except at these two well clusters. A number of piezometers have been identified for installation as part of the Preliminary Groundwater Operable Unit Remedial Investigation (PGOURI) (Radian, March 1989). These will aid in determining the Area C extraction system zone of capture and in calculating vertical and horizontal gradients.

The horizontal and vertical gradients that can be calculated at this time in Area C are presented below. Analytical data on several monitoring wells are also discussed.

Water-Level Data

Water-level data in Area C wells measured in January prior to groundwater sampling were used to generate potentiometric maps. The potentiometric maps for the shallow and middle zones in Area C (Plates 2, and 4) do not show any effect of pumping. The deep "A" zone potentiometric map does

show some effect from the extraction system. There is a limited number of monitoring wells placed near enough to the extraction wells to delineate the capture zone of the extraction wells.

Horizontal gradients were calculated from water level data from two pairs of monitoring wells screened in the same monitoring zone (Table 2-2). Monitoring well MW-136 and MW-138 are located 16 feet and 580 feet east of EW-137 respectively. The two monitoring wells are screened in the deep "B" monitoring zone and EW-137 is screened in the deep "A". Monitoring wells MW-128 and MW-33S are located 122 feet and 318 feet north of EW-144, respectively. The two monitoring wells are screened in the shallow monitoring zone and EW-144 is screened in both the middle and deep "A" monitoring zone.

Vertical gradients were calculated at two monitoring well clusters, MW-128/MW-129/MW-130 and MW-134/MW-135 (Table 2-2). Monitoring well MW-128 is screened in the shallow monitoring zone; MW-129 and MW-135 are screened in the middle monitoring zone; and MW-130 and MW-134 are screened in the deep monitoring zone.

The calculated horizontal and vertical gradients determined for this sampling period and the previous sampling period are shown in Table 2-2. The horizontal gradient between MW-136 and MW-138 indicate a flow potential toward the extraction well EW-137. The calculated vertical gradients for the three well pairs indicate a downward flow potential from the shallow to middle monitoring zones and from the middle to the deep zone near EW-144.

Because there are no well clusters located near the other three extraction wells, the same type flow potential assessment cannot be conducted for EW-137, EW-140 and EW-141.

The information from the limited calculated horizontal and vertical gradients does not provide the data needed to determine the effect of the extraction system on the local groundwater flow patterns. The horizontal gradients calculated for the shallow and deep "A" monitoring zone indicate

TABLE 2-2. HEAD DIFFERENCES AND GRADIENTS OF SELECTED WELL PAIRS IN AREA C, JANUARY THROUGH MARCH, 1989

Well Pair	Monitoring Zone	Head Difference (feet)	Gradient
Horizontal		****	
MW-128 & MW-33S	Shallow	0.32	8.6 ft/mile (0.0016 ft/ft)
MW-136 & MW-138	Deep "B"	0.83	7.5 ft/mile (0.0014 ft/ft)
Vertical			
MW-128/MW-129	Shallow/Middle	0.45	-0.01 ft/ft
MW-129/MW-130	Middle/Deep	1.96	-0.04 ft/ft
MW-135/MW-134	Middle/Deep	0.13	<-0.01 ft/ft

Note: Negative sign indicates downward flow potential.

 $^{^{}f \star}$ First well of the well pair is located closest to the extraction well.

that there is a flow potential toward EW-144 and EW-137. Without additional wells in the three other monitoring zones, the influence of the four extraction wells on the groundwater flow pattern in these monitoring zones cannot be determined.

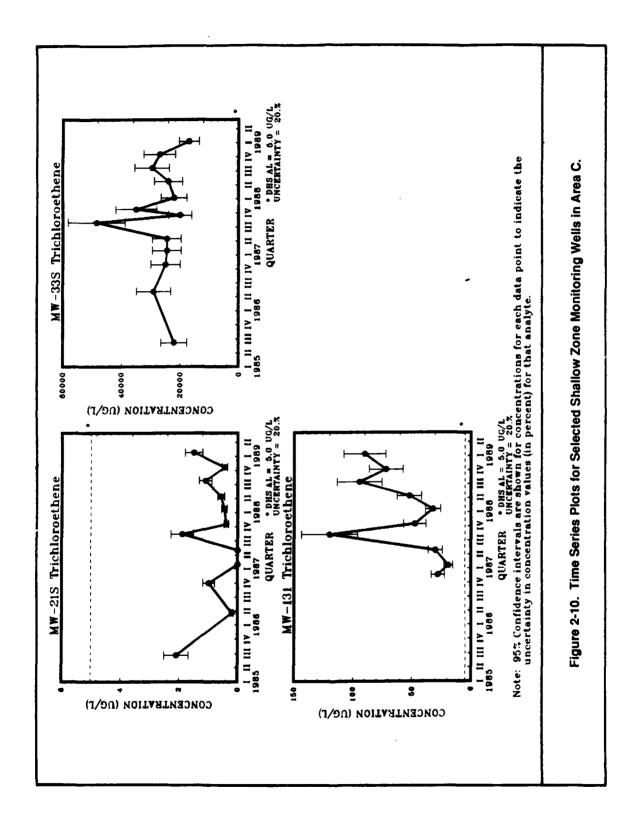
Analytical Data

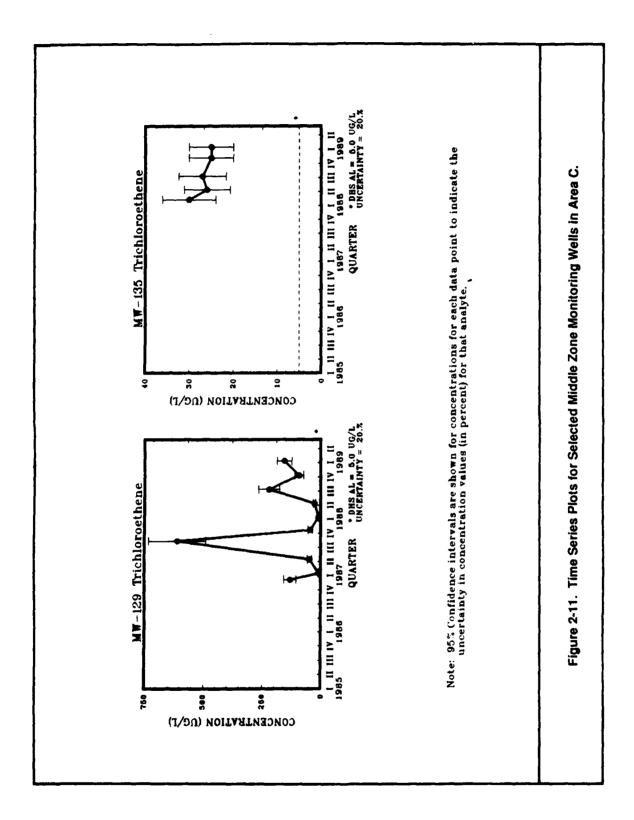
Analytical data for several monitoring wells are presented using time series plots to develop information that can be evaluated in the future to determine the effect of the extraction system on water quality. Trichloroethene data was plotted from three shallow zone monitoring wells, two middle zone monitoring wells, and three deep zone monitoring wells. Trichloroethene was chosen as an indicator compound because it is the most widely detected compound in the McClellan AFB groundwater monitoring network.

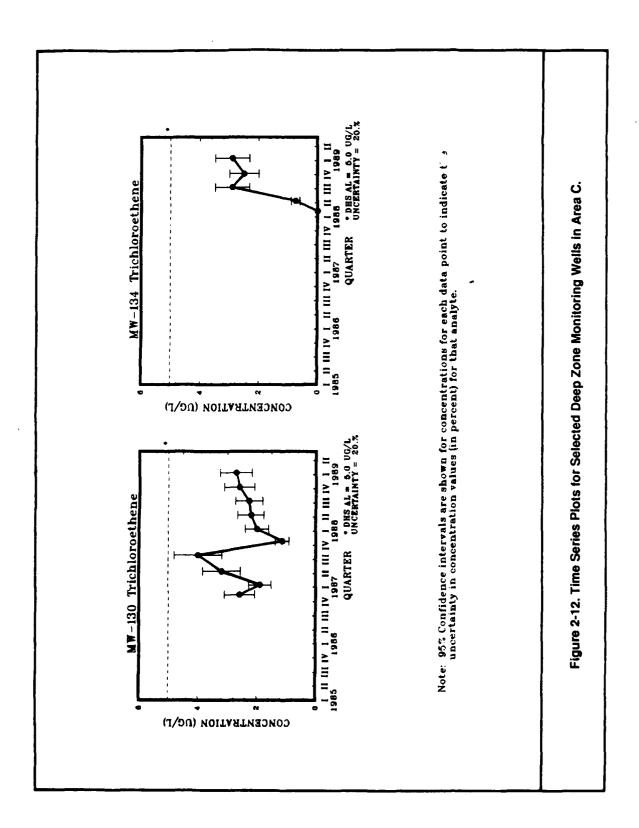
Time series plots for seven Area C wells are depicted in Figure 2-10, 2-11, and 2-12. Figure 2-10 presents time series plots for three shallow zone monitoring wells, MW-21S, MW-33S, and MW-131. These three monitoring wells are located north and east of the extraction wells. Trichloroethene concentrations are above drinking water standards in MW-33S and MW-131. Time series plots for MW-129 and MW-135, middle monitoring zone wells, are shown in Figure 2-11. Monitoring well MW-129 is located north of the extraction wells and MW-135 is located south of the extraction wells. Trichloroethene concentrations are above drinking water standards in both MW-129 and MW-135. Time series of ots for two deep zone monitoring wells are shown in Figure 2-12. Monitoring wells MW-134 and MW-130 contain TCE at concentrations below drinking water standards. Monitoring Well MW-134 is located south of the extraction wells and MW-130 is located north of the extraction wells.

The time series plots for the seven wells all show fluctuating trends. The TCE trends will be reviewed over time to qualitatively assess whether the extraction wells are preventing the migration of contaminants away from Area C. Time series plots from additional wells may be added if specific trends become apparent. The TCE concentrations in monitoring wells south of









the extraction system should become stable or decrease over time if the extraction wells are preventing migration of contaminants away from Area C. Tests for seasonality were also performed on these data. Seasonality is the appropriate cyclical trend for which to analyze these data. Seasonality results were reported in the Annual Technical Report (Radian, April 1989) and results indicate insufficient evidence currently exists to verify seasonal trends.

Conclusions

The Area C extraction system was designed to remove contaminants near the source as an interim remediation measure. Further work in the RI/FS process will allow time for upgrading the system by installing piezometers and evaluating the need for constructing additional extraction wells in Area C. However, at the present time, the influence of the Area C extraction system cannot be evaluated using the existing network of monitoring wells. There are not enough well pairs to determine the effect of the extraction wells on the hydraulic gradients, and thus evaluate changes in local groundwater flow patterns. There are also not enough analytical data because the extraction system has not been in operation long enough to identify any changes in contaminant concentrations. Finally, trichloroethene concentration trends of monitoring wells located upgradient and downgradient of the extraction wells will continue to be examined in order to determine the extent of Area C groundwater contamination which the extraction system is removing.

3.0 RECOMMENDATIONS

Based on field results and analytical data collected during January, February, and March 1989, the following recommendations are presented in Section 3.1. Section 3.2 presents the status of the recommendations given in previous quarterly reports.

3.1 Current Recommendations

(1) Recommendation: Sampling of Monitoring Well MW-64 should continue for at least one more round. Sampling of MW-7, MW-65, MW-66, and the newly installed wells in Area B and the Southwest Area should commence for at least three sampling rounds.

Rationale: These wells are located in Area B and the Southwest Area and may provide information useful for determining contaminant migration in and around the Area B Operable Unit. Three sample rounds will provide the information needed to evaluate the usefulness of these wells.

(2) Recommendation: McClellan AFB EM should provide access to a recently fenced-off monitoring well cluster, MW-111/112/113, located in the West Area.

Rationale: These wells would provide useful water-level data. In addition, an increasing contaminant trend has been observed in MW-111 and needs continued monitoring.

(3) Recommendation: McClellan AFB EM should have maintenance work done on the three Area D extraction wells (EW-73, EW-83, and EW-84) with blocked sounding tubes.

Rationale: Unknown obstructions are blocking the sounding tubes. Removal will permit measurement of water levels.

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3.2 Status of Previous Recommendation

The following is a brief status report on of the recommendations made in previous reports.

(1) Recommendation: Install a monitoring well in the deep monitoring zone at monitoring well cluster MN-1021/1022 in the southwest area.

Status: This recommendation will be initiated within the Preliminary Groundwater Operable Unit Investigation (PGOURI) (Radian, March 1989) during 1989. The Remedial Investigation Feasibility Study (RI/FS) Management Plan provides details concerning the scope and timing of the PGOURI.

(2) Recommendation: Install two clusters of monitoring wells on the east side of McClellan Air Force Base (AFB).

Status: This recommendation will be initiated within the PGOURI during 1989. The RI/FS Management Plan provides details concerning the scope and timing of the PGOURI work.

(3) Recommendation: Install a deep zone monitoring well in Area A next to middle zone monitoring well MW-27D.

Status: This recommendation is under consideration by the United States Air Force.

(4) Recommendation: Bladder pump safety lines should be attached to bladder pumps in all monitoring wells in which this has not yet been done.

Status: This recommendation is under consideration by the United States Air Force.

(5) Recommendation: Sampling of MW-25D and MW-26D should continue for one more sampling round to establish a database on these wells.

Status: These wells will be sampled again during the April 1989 Sampling Event. After three sampling rounds, the usefulness of the continued monitoring of these wells can be assessed.

(6) Recommendation: Resurvey wells that have been recently redeveloped and are lacking accurate elevation data. These wells include MW-7, MW-26D, MW-64, MW-65 and MW-68.

Status: These wells will be resurveyed during Spring 1989 Well Maintenance work.

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APPENDIX A-1. MONITORING WELLS SAMPLED ANNUALLY

Well Number	Area	Rationale	
ON-BASE MONITORIN	G WELLS:		
MW-17D	Other	a,b,c	
MW-18D	Other	a,c	
MW-27D	A	a,b	
MW-29D	Other	a,b,c	
MW-36S	С	a,b	
MW-67	Α	a,b,c	
MW-68	Α	a,b,c	
MW-69	Α	a,b,c	
MW-100	Other	a,c	
MW-101	Other	a,c -	
MW-102	Other	a,b,c	
MW-103	Other	a,b,c	
MW-106	Other	a,b,c	
MW-107	С	a,b,c	
MW-108	С	a,b,c	
MW-109	С	a,b,c	
MW-110	С	a,b,c	
MW-111	С	a,b	
MW-112	С	a,b,c	
MW-113	С	a,b,c	
MW-116	Other	a,b	
OFF-BASE MONITORI	NG WELLS:		
MW-1009	Northwest	a,b,c,d	
MW-1010	Northwest	a,b,c,d	
MW-1011	Southwest	a,b,c,d	
MW-1012	Northeast	a,c	
MW-1017	West	a,b,c,d	
MW-1018	West	a,b,d	
MW-1026	Northwest	a,b,c,d	
MW-1027	Northwest	a,b,c,d	
MW-1028	Northwest	a,b,c,d	
MW-1029	Northwest	a,b,d	
MW-1030	Northwest	a,b,c,d	
MW-1031	Northwest	a,b,c,d	
MW-1032	West	a,b,c,d	
MW-1033	West	a,b,c,d	
MW-1034	West	a,b,c,d	

(Continued)

APPENDIX A-1. MONITORING WELLS SAMPLED ANNUALLY (Continued)

Well Number	Area	Rationale	
OFF-BASE MONITOR	ING WELLS:		
MW-1035	West	a,b,c,d	
MW-1036	West	a,b,d	
MW-1040	Northeast	a,b,c,d	
MW-1041	Northwest	a,b,c,d	
MW-1042	Northwest	a,b,c,d	
MW-1043	Northwest	a,b,c,d	

 $^{^{\}mathbf{a}}$ Well is not currently used to evaluate the effectiveness of the Area C or Area D extraction system. $\boldsymbol{\dot{}}$

 $^{^{\}rm b}$ Well is not located within 1,000 feet of an active water supply well.

Well has consistently not contained detectable concentrations of contaminants or has never contained detectable concentrations of contaminants.

 $^{^{}m d}$ Well is located upgradient within the interim remedial measure area.

Appendix A-2. SW 846 Method 8010 List of Compounds

Compound

*Benzyl chloride

*Bis(2-chloroethoxy)methane

*Bis(2-chloroisopropyl)ether

*Bromobenzene

Bromodichloromethane

Bromoform

Bromomethane

Carbon tetrachloride

*Chloroacetaldehyde

Chlorobenzene

Chloroethane

Chloroform

*1-Chlorohexane

2-Chloroethyl vinyl ether

Chloromethane

*Chloromethylmethyl ether

*Chlorotoluene

Dibromochloromethane

*Dibromomethane

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

*Dichlorodifluoromethane

1,1-Dichloroethane

1,2-Dichloroethane

1,1-Dichloroethylene

trans-1,2-Dichloroethylene

Dichloromethane

1,2-Dichloropropane

trans-1,3-Dichloropropylene

*1,1,2,2-Tetrachloroethane

1,1,1,2-Tetrachloroethane

Tetrachloroethylene

1.1.1-Trichloroethane

1,1,2-Trichloroethane

Trichloroethelene

Trichlorofluoromethane

*Trichloropropane

Vinyl chloride

Source: U.S. EPA, Nov. 1986. "Test Methods for Evaluating Solid Waste, Third Edition.

^{* -} Compounds presently not included in the list of analytes reported by Radian analytical services. Full list will be reported after July 1989.

ANALYTICAL RESULTS FOR NETWORK MONITORING WELLS IN WHICH CONCENTRATIONS OF ANALYTES HAVE EXCEEDED STATE AND FEDERAL DRINKING WATER STANDARDS FROM 1985 TO MARCH 1989, GROUNDWATER SAMPLING AND ANALYSIS PROGRAM, MCCLELLAN AFB APPENDIX A-3.

Well Number	401100			2	•		IST UTE.	2nd Otr.		4th Otr.	1st Otr.	2nd Otr.	3rd Otr.	4th Otr.	1st Otr.
Number		Primary	1985	1985	1986		1987			1987	1988	1988		1988	1989
	Level		6/85	11-12/85			1-3/87	_	7-9/87	9-12/87	9-12/87 1-3/88	88/9-7		10-12/88 1-3/89	1-3/89
Vinyl chloride by Method 8010	Method 8	010				1 1 1 1 1 1 1	; ; ; ; ;		!		: : : : :		• • • • • • • • •	 	• • • • • • • • • •
HM-10	7	~	Q		NS	NS	NS	NS	NS	NS	SZ	400C	3600	100C	73C
№ -11	7	7	Ð		NS	NS	NS	SZ	SN	NS	NS	130	QN	NS	Q
M-33S	2	-	ě		NS	2.9NC	15DL	1101	5.1DL	QN	QN	ã	QN	õ	Q.
144-38D	~	1	2230	SN	NS	NS	NS	NS	NS	NS	NS	NS	NS	MS	NS
MM-54	7		NS		NS	1200C	1224C	190C	170	40C	5.00	Q	2.90	2	Ø
MH-72	7		NS		NS	NS	NS	41C	Q	Q	QN	QN	QN.	Q.	QN
Methylene chloride by Method 8010	le by Meth	od 8010													
MM-10	0,4	NE	55.3		NS	NS	NS	NS	NS	NS	NS	0.60	QN.	QX QX	Q.
MV-11	04	NE NE	3140		NS	NS	NS	NS	NS	N.S	NS	260C	Q	NS	Q
MW-14	0,	NE	11400		NS	NS	NS	NS	NS	NS	NS	130	QN	QN	Q
MW-15	04	NE	1790		SN	NS	NS	NS	NS	NS	NS	0.70	QN	QN	Q¥
MM-29D	04	Ä	Ð		270	Q	Ę	Q	QN	QN	NO	Q	QN	Q.	NS
MM-33S	0,	NE	Q		NS	£	1.20	4.0C	4 . 6DL	QN	QN	QN	2	Q.	11000
MM-36S	40	NE	Q		12	860BC	Q	Q	2.2C	W	QN	Ð	QN	æ	NS
MM-55	40	NΕ	NS		NS	320C	QN	Ş	Q	QN	QN	£	Q	£	Q
M4-59	04	NE.	NS		Q	220C	Q	Q	0.870	QN	Q	Ş	Ø	æ	Q.
MM-103	0,4	NE	NS		Q	Q.	Q	Q.	Q	QN	QN	ē	Q	N ON	NS
MW-104	0*	NE	NS		870	Q.	QN.	Š	Q	QN	Q	Q	2	QN	æ
M4-105	04	NE	NS		420	Q	Q.	ND CM	Q	Q	Q	Q	2	ND Q	QN
MW-112	04	N.	NS		12	2	Q	Q	1.4C	2	Q	Q	Q	NS	NS
M-115	0,4	N N	NS		9	Q	Q	Q	Q.	Q	Ş	Q	QN	ND	Q
MW-128	04	NE	NS		SN	2	Q	5.10	1.1DL	Q	Q	Q	Q	Q.	800C
MA-1001	40	NE	NS		18	Q	Q	X.	£	Q.	Q	æ	Q.	æ	Q
MA-1005	04	NE	NS		2	72BC	4 . 4C	0.420	Q	ð	Q	Q	Q.	Q	QN
MH-1013	04	NE.	NS	£	Q.	230C	ND	Ð	Q.	Q	Q	æ	Q	Q	Q
MI-1019	0,4	NE	SN		3.0	510C	Q	2	Q	Q	Q	QN	Q	Q	Q
1,1-Dichloroethene by Method	ne by Meth	od 8010													
MW-10	•	7	1500		NS	S.	NS	NS	NS	NS	NS	910C			840C
M-11	9	,	64300		NS	SN	NS	NS	NS	NS	NS	17000C			19000C
MW-12	9	7	25500		SN	NS	NS	NS	NS	NS	NS	8400C			2600P
MM-14	9	1	22600		NS	NS	NS	NS	NS	NS	NS	5700C			4600C
MW-15	9	7	16500	-	NS	NS	NS	NS	NS	N6	NS	830			580C
M4-22D	9	7	297		NS	Q	NO QN	Q	QN	QN	QN	QN			QN Q
MW-28D	9	7	6.9		NS	NS	NS	QN	QN	QN	QN	Q			QN
MM-38D	9	7	11500	SN C	NS	NS	NS	NS	SN	NS	NS	NS	NS	NS	NS
MM-44S	9	7	NS		Ð	0.550	QN Q	Q	8.50	3.3 C	3.30	2.8PC			4.7P
M4-53	9	7	NS		NS	QN	NO ON	QN	2.10	130	11PC	2.5PC			NS
M4-54	9	1	NS		NS	430C	1710	52C	110	22C	8.5PC	0.36PC			ð

All Units are ug/l

MW = Monitoring Well

LOQ = Limit of quantitation

NC = Result was not confirmed in second column analysis

ND = Not interested

NR = Not respected

NR = Not respecte

A-3-1

(continued)
A-3.
APPENDIX

	Analyte Name	DBS	U.S. EPA	Round 1	i	Round 3	4th Qer.	~	2nd Qtr.	3rd Qtr.	4th Qtr.	Ä	2nd Qtr.	3rd Qtr.	4th Qtr.	1st Otr.
No. No.	Well Number	Action	Primary MCL	1985 6/85	• • •	1986 2-4/86	1986 9-12/86		1987	1987 7-9/87	1987 9-12/87	-	1988 4-6/88	1988 7-9/88	1988 10-12/88	1989 1-3/89
1	1.1-Dichloroeth	ene by Meti	od 8010		1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			,			1	; ; ; ; ;	i 1 1 1		1
7 NS NS 2.3C 13C ND 1.6C 1.2C 3.6C 7 NS <	M-55	, φ	,	WS.	NS	SN	2100				24C	33C	13PC	52P	61P	4.1P
1	FM- 57	ø	7	NS	NS	NS	2.30				1.20	3.60	0.31PC	GN	0.36P	æ
7 NS NS </td <td>MA-59</td> <td>v</td> <td>7</td> <td>NS.</td> <td>NS</td> <td>11</td> <td>270C</td> <td></td> <td></td> <td></td> <td>150</td> <td>3.1PC</td> <td>0.53PC</td> <td>æ</td> <td>Q</td> <td>0.11P</td>	MA-59	v	7	NS.	NS	11	270C				150	3.1PC	0.53PC	æ	Q	0.11P
7 NS NS </td <td>MA-72</td> <td>\$</td> <td>7</td> <td>NS</td> <td>NS</td> <td>NS</td> <td>SN</td> <td></td> <td></td> <td></td> <td>520C</td> <td>930PC</td> <td>800PC</td> <td>800P</td> <td>460C</td> <td>370P</td>	MA-72	\$	7	NS	NS	NS	SN				520C	930PC	800PC	800P	460C	370P
1	74-7¢	ø	7	SE	NS	NS	NS				SN	NS	12C	12P	12P	NS
7 NS 100 ND ND<	MA-76	ø	7	S.	NS	SX	NS				NS	NS	200C	787	39P	SN
1	HA-89	•	7	SN	NS	NS	NS				QN	0.75C	0.97C	1.10	2.50	6.2C
7 NS NS NS 3.2C 4.0C 6.1C 8.6C 2.5C 2.9PC 7 NS 120 59 110C 62C 160C 180C 41C 23PC RE 118 NS	M4-91	ø	7	NS	NS	NS	NS				3.30	1.30	0.65PC	1.20	0.74C	3.2C
The Mathematical State of the Mathematical Stat	MM-130	9	7	SX	NS	NS	3.20				2.5C	2.9PC	2.7PC	3.4P	2.0P	2.8P
Thod 8010 NS	MA-1004	9	7	NS	120	59	100C				410	23PC	16PC	12C	140	7.0P
NE 118 NS	M4-1005	v	7	NS	160	66	110C				79C	SBPC	38PC	40P	33P	20C
NE 118 NS	1,1-Dichloroeth		od 8010													
NE 3560 NS N	MH-10	20	NE	118		NS	NS				N.S	SN	230C	180C	100C	1100
NE ND NS NS<	₩-11	20	N.	3560	_	NS	NS				NS	NS	\$20C	£	NS	270C
NE ND NS NS<	MI-12	20	NE	Q		NS	NS				NS	SN	29C	Q	Q.	Q
NE 1780 NS N	PE-14	20	ĸ	2		NS	NS				SN	NS	764	₽	õ	ð
NE ND NS 2.7NC 5.9DL 8.1DL 3.1DL ND ND NE 430 NS	MI-15	20	NE	1780		NS	NS				NS	NS	24C	Q	130	æ
NE 4430 NS N	FW-33S	20	N.	Q.		NS	2.7NC				Q	Q.	Q	440C	QN Q	æ
NE NS NS 1400C 549C 150C 20C 10C 2.9C NE NS NS NS NS NS 15C 15C 20C 15C 20C 15C 2.9C by Method 8010 NS	MM-38D	20	NE	4430	_	NS	NS				NS	NS	NS	N.S	NS	NS.
NE NS NS NS NS 64C 150C 50C 66PC by Method 8010 NS 41 15 26C 12C 27C 24C 7.5C 5.2PC NE NS NS NS NS NS NS NS NS NE ND NS NS NS NS NS NS NS NE ND NS NS NS NS NS NS NS NE ND NS NS NS NS NS NS NS NE ND ND ND ND ND ND NS NS NS NE NS NS NS NS NS NS NS NS NE NS NS ND ND ND C4C C5C C1C C1C NE NS NS NS NS NS NS N	PM-54	20	NE	N.S		SN	1400C				10C	2.9C	0.39PC	7.6C	0.74P	0.450
NE NS 41 15 26C 12C 27C 24C 7.5C 5.2PC NE ND NS	MM-72	20	NE	SN		NS	N.S				20C	66PC	SOPC	56P	744	49P
by Method 8010 NS	MM-1005	20	NE	NS		15	26C				7.50	5.2PC	2.2PC	8.4P	4. 9P	1.70
16 NE ND NS NS<	Total 1,2-Dichl		Method													
16 NE ND NS NS<	MM-10	16	NE	2	_	NS	NS	NS	NS	NS	NS	SNS	120	460C	160C	130C
16 NE ND NS NS<	MH-11	16	NE	Q.		SN	NS NS	NS	NS	NS	NS	NS	51C	Q.	NS	190C
16 NE ND NS NS NS NS NS NS NS	MA-14	16	NE	S	_	NS	NS	NS	NS	NS	NS	NS	27C	2	Q	Q.
16 ME	MM-270	16	NE	Q	_	NS	NS	NS	18C	30C	5 90	16C	28PC	34P	20P	NS
16 NE	MM-33S	16	별	G.	_	S.N.	ND	QN	Q.	2069	430C	470C	7600	240C	360P	580P
5 16 NE ND NS ND ND ND 24C 20C 17C 17C 16 NE NS NS NS ND ND ND 62C 0.64C 5.7C 0.78C 16 NE NS NS ND ND ND 65C 68C 5.7C 1.2C 16 NE NS NS NS NS NS NS NS 16 NE NS NS NS NS NS NS NS 16 NE NS NS NS NS NS	MA-38D	16	NE	7020	_	NS	NS	NS	NS	SN	S.	NS.	NS	S	NS	S
16 NE NS NS ND ND 62C 0.64C 5.7C 0.78C 16 NE NS NS NS NS NS NS 11C 7.5C 5.7C 12C 16 NE NS NS NS NS NS NS NS NS 16 NE NS NS NS NS NS NS NS 16 NE NS NS NS NS NS NS NS 16 NE NS NS NS NS NS NS 16 NE NS NS NS NS NS NS NS 1 NE NS NS NS NS NS NS NS 1 NS NS NS NS NS NS NS NS	MM-41S	16	NE	S		Q	QN	QN	24C	20C	170	170	22PC	25P	11P	Q.
16 NE NS NS ND ND 27 11C 7,5C 5,7C 12C 16 NE NS NS NS NS NS 68C 5,2C 43C 16 NE NS NS NS NS NS NS NS 3 16 NE NS NS NS NS NS NS NS 1 16 NE NS NS NS 19DL ND 250DL 400DL ND ND 1 16 NE NS NS 19DL ND 250DL 400DL ND ND 1 16 NE NS NS 19DL 6.1 11C 34C 27C 14C	MM-54	16	NE	NS		SN	QN	Q	62C	0.64C	5.7C	0.780	S.	7.0C	Q	S
16 NE NS NS ND ND ND 65C 68C 52C 43C 16 NE NS	MA-55	16	NE	NS	_	NS	ÖN	27	110	7.50	5.7C	12C	7.4PC	28P	41P	0.72P
16 NE NS NS NS NS 48C 75C v74C 99C 15C NS	MM-63	16	X.	SN		QN	Q	QN	929	980	22C	43C	33PC	46P	46P	310
16 NE NS 19DL ND 23C ND 18C 10C 16 NE NS NS NS NS 19DL ND 250DL 400DL ND ND 16 NE NS NS 6.8DL 6.1 11C 34C 27C 14C	MH-72	16	NE	NS	_	NS	NS	NS	48C	75C	174C	266	48PC	80P	264	34P
16 NE NS NS ND ND ND 23C ND 19C 10C 16 NE NS NS NS 19DL ND 250DL 400DL ND ND 16 NE NS NS 6.8DL 6.1 11C 34C 27C 14C	MA-76	16	NE	NS	_	SN	NS	SN	SN	NS	NS	NS	28C	14C	8.6P	NS
16 NE NS NS 19DL ND 250DL 400DL ND ND 14C 16.1 11C 34C 27C 14C	MM-120	16	NE	NS		QN	QN	QN	23C	NO	18C	10C	17PC	110	7.6C	4.30
16 NE NS NS 6.8DL 6.1 11C 34C 27C 14C	MW-128	16	NE	NS	_	NS	19DL	QN	250DL	400DL	QN	Q	230C	340C	200C	190C
	MW-131	16	NE	S.W.	_	NS	6.8DL	6.1	110	34C	27C	14C	24PC	210	31P	192
NS NS 19 ND 32C 28C 29C 33C	MW-132	16	NE	NS	_	NS	19	Ŷ	32C	28C	29C	330	22C	39P	35P	25C
	All Units are ug/	s /1)[Diluted	out of the	e confirmat	ation run					

All Units are ug/l

MN = Monitoring Well

LOQ = Limit of quantitation

ND = Nothing detected

ND = Not respond column analysis

ND = Not respond column analysis

ND = Nothing detected

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Analyte Name	DHS	<	Round 1	Round 2		4th Qtr.	1st Qtr.		3rd Qtr.	4th Qtr.					1st Otr.
Well Number	Action Level	Primary MCL	1985 6/85	1985 11-12/85	1986 2-4/86	1986 9-12/86	1987 1-3/87	1987 4-6/87	1987 7-9/87	1987 9-12/87	1988 1-3/88	1988 4-6/88	1988 7-9/88	1988 10-12/88	1989 1-3/89
Total 1,2-Dichloroethene by Method 8010	roethene b	y Method 8(010					1							
MA-139	16	ME	_	NS	NS	NS	NS	NS	NS	SN	24C	16PC	24C	34P	26C
HW-1000	16	NE	NS	QN	QN	0.23	QN	25C	Q	£	QN	QN	0.160	£	æ
MW-1005	16	NE	SX	43	Q.	Q	4.6	29C	160	14C	5.10	2.5PC	4.8P	2.5P	1.30
Chloroform by Method 8010	thod 8010														
M4-14	100	100	2320	NS	NS	NS	NS	NS	NS	NS	NS	12C	Ð	Q	욡
1,2-Dichloroethane by Method	ne by Meth	od 8010													
M-10		'n	94.7	SN	NS	NS	NS	NS	NS		SN				250C
HH-11	-	'n	ě	NS	NS	NS	NS	NS	NS		N.S				Ž
MN-14	-	'n	2790	SN	NS	NS	NS	NS	NS		SE				34C
HW-15	-	٠,	Q.	NS	NS	NS	NS	NS	NS		NS				Q
MM-27D	7	٠,	QN	NS	NS	NS	NS	Q.	QN		0.410				NS
MW-33S	7	٠	£	S X	NS	62C	880	Q	140DL		Q				200P
MM-38D	-	٠,	300	NS	NS	NS	NS	NS	NS		NS				SN
M4-415	-	٠	Q	NS	Š	2	QN	. 99DL	Q		2				Ş
156-54	1	5	NS	NS	SN	39DL	14C	ě	0.230		0.170				Š
MA-55	-	'n	SN	NS	NS	2.9DL	5.9	0.93DL	QN		1.10				2
MW-72	-	'n	NS	NS	NS	NS	NS	28C	140C		140PC				130P
M4-76	-	5	NS	NS	NS	NS	NS	NS	N.S	NS	NS		ě	0.38P	NS
M4-117	~	'n	NS	NS	0.2	1.0C	NS	NS	NS		NS				NS
MW-128		•	NS	NS	NS	41DL	Q	e3DL	75DL		CN				Q
MW-131	-	s	NS	NS	NS	N Q	QN	QN	QX		0.310				0.82P
MW-139	1	s	NS	NS	NS	NS	NS	NS	NS		1.80				1.10
HW-1004	-	s	NS	S	0.7	1.90	Q	£	ã		0.40PC				0.22P
HW-1005	7	'n	NS	'n	8.6	14C	5.70	7.9C	Q.		2.2PC				0.610
1,1,1-Trichloroethane by Method 8010	thane by M	ethod 8010													
MM-10	200	200	327	_	NS	NS	NS		NS	NS	NS	36C		23C	Q
M-11	200	200	18100	SN	NS	NS	NS	NS	NS	NS	NS	3800C	2700C	NS	2000S
MV-12	200	200	12400		NS	NS	NS		NS	NS	NS	1200C		590P	360P
MV-14	200	200	22800		NS	NS	NS		NS	N.S	NS	3100C		3200P	2300C
M4-15	200	200	4100		NS	NS	NS		NS	NS	NS	110C		300C	170C
MV-33S	200	200	Q.		NS	Q	0.27DI		280C	2	Ş	Q.		Q	ð
M4-38D	200	200	1870		NS	NS	NS		NS	S.	NS	NS		NS	S.
Carbon tetrachloride by Method 8010	ride by Me	thod 8010													
MM-27D	•	s	Q	_	NS	NS	NS	27C	14C	9 1 6C	5.10	9.1PC	11P	8.7P	NS
MM-33S	5	'n	Q	NS	NS	Q	Q	. 41DL	22DL	Q	Q	Q	Q	QN	Ð
1,2-Dichloropropane	ane by Method	hod 8010													
MW-33S	10	NE	QN		NS	Q	19DL	23DL	13DL	Q	R	Q	Ð	Q	ð
MW-128	10	NE	NS	NS	NS	14DL	£	19DL	16DL	QN	Q	Q	æ	Q	Q
Trichloroethene by Method 8010	by Method	8010													
MM-6	s	s	86.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	SN	NS	SN
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						44.6			6 1 1 1 1 1	:		1	

All Units are ug/l

MG = Result was not confirmed in second column analysis

LOQ = Limit of quantitation

MC = Result was not confirmed in second column analysis

ND = Not inalyzed

P or PC = Identity previously confirmed

NA = Not reported

NA = Not reported

NA = Not reported

NA = Not analyzed

C = Analysis confirmed in second column analysis

MB = Compound detected in laboratory blank - not edited

NA = Well not part of the sampling program at the time of sampling, or well was not sampled for a particular analyte.

Analyte Name	DBS	U.S. EPA	Round 1	Round 2	Round 3	4th Qtr.	1st Qtr.	2nd Otr.		4th Qer.		2nd Qtr.	3rd Qtr.	4th Qtr.	lst Qtr.
Well Number	Action Level	Primary MCL	1985 6/85	1985 11-12/85	1986 2-4/86	1986 9-12/86	1987 1-3/87	1987	1987 7-9/87	1987 9-12/87	1988 1-3/88	1988 4-6/88		1988 10-12/88	1989 1-3/89
Trichlorosthens by Method 8010	by Merhod	8010	1	-							1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1		
7-794	,	s	38.2	SX	SN	SN	SN	SN	SN	SN	SM	SN	_	SN	_
6-1	Ś	'n	134	NS	SN	NS.	NS	S S	SX	NS.	NS.	S.	_	NS	NS
M -10	'n	5	826	_	NS	NS	NS	SN	NS	NS	NS	1500C	•		_
HE-11	'n	s	11900	_	NS	NS	NS	NS	NS	NS	NS	6200C	•	_	•
FEI−12	'n	5	1210	_	S.R.	NS	NS	NS	NS	NS	NS	2500C	_		-,
¥-14	'n	'n	2660	_	SN	NS	NS	NS	NS	NS	NS	6500C	•	_	•
FEI-15	\$	s	1800(SN	NS	NS	NS	NS	NS	NS	NS	550C	-,		•
MH-19S	٠	'n	4.3	NS	5.6	8.20	NS	SN	NS	NS	NS	NS	_		_
MH-22D	s	s	213	NS	NS	QN	Ş	Ş	QX	Q	Š	Q	_	-	_
MH-26D	'n	'n	8.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	_		•
M-265	49	47	21.3	NS	NS	NS	_	NS	NS	NS	NS	NS			
MM-27D	9	'n	9 . 4	SN	NS	NS	NS	1950		40C	350	56PC	-		_
M-27S	'n	s	63.4	NS	NS	NS	-	NS	z	NS			_		_
MH-28D	s	'n	6. 8	NS	NS	NS			_				_		_
MH-33S	'n	'n	22600	SN C	NS	25000C			-,	•					
MH-36S	47	ď	2.9	NS	1.8	2.2NC			-,						_
M4-38D	'n	'n	296	SN	NS	NS			-				_		_
S04-15	s	ď	190	NS	NS	NS			_	_					_
M4-41S	s	'n	23.2	NS	20	244C	37C		_						
MH-54	ۍ	'n	SW	NS	NS	700 · 6			_						_
281-55	'n	'n	X.	SN	NS	110C			•-•						-
FM-57	41	ç	NS	S	NS	2.5C			_	_					_
ME-59	'n	'n	NS	NS	12	290C			_	_			_		_
M4-61	•	ď	NS	NS	3.1	7.4			_						• •
M4-63	'n	'n	NS	NS	07	24C			_	-,					
M-72	'n	ď	S.	NS	NS	NS			_	٠.			-		
¥2-34	S	s	NS	SN	NS	NS			~	_					_
MM-75	'n	'n	NS	NS	NS	NS			-	_	-				•
HH-91	ş	ş	NS	NS	NS	NS			_	_			_		_
MM-92	ş	'n	N.S	NS	SN	NS			•	•					•
M4-117	'n	'n	S X	NS	17	21C			_	_			_		_
MH-120	s	ş	NS	SX	24	20C			.4	•	_		_		٠.
MH-123	ş	•	NS	SN	3.1	7.1C			_	_	-		_		_
M-128	'n	s,	NS	NS	SN	41000C			•	•					•
MH-129	'n	s	SN	NS	NS	130C			•	_			-		
MH-131	'n	'n	SN	NS	NS	29C			_	٠.			-		•
MW-132	'n	'n	NS	NS	NS	30C			_				-		_
MH-135	'n	٠,	NS	S	SH	NS	NS	NS	NS	NS	30C		27C		25C
MH-136	'n	5	NS	N.	NS	NS			_	_			-		•
All Units are ug/l	1/1				1 1 1 1 1 1 1 1 1	- 10	Diluted out	out of the		confirmation run		1		! ! ! ! ! !	

All Units are ug/l

MM = Monitoring Well

LOQ = Limit vas not confirmed in second column analysis

ND = Not established

ND = Nothing detected

ND = Nothing det

Made w	SHQ	U.S. EPA	Round 1	Round 2	Round 3	4th Qtr.	1st Qtr.			4th Qtr.		2nd Qtr.	3rd Qtr.	4th Qtr.	lst Qtr.
Number	Act ion Level	Primary MCL	1985 6/85	1985 11-12/85	1986 2-4/86	1986 9-12/86	1987 1-3/87	1987	198/ 7-9/87	198/ 9-12/87	1-3/88	1988	1968 7-9/88	1988 10-12/88	1989 1-3/89
Trichloroethene by Method 8010	Method	3010							 	; ; ; ;	 	 	!		
MA-139	•	s	X	NS	NS	NS	NS.	NS	NS	NS	890	74PC	830	63P	950
M-1004	•	٠,	NS	14	15	26 C	18C	27C	24C	7.2C	3.6PC	2.6PC	2.2C	2.4C	1.3P
MI-1005	•	5	NS	100	62	800	29C	950	86C	22C	15PC	12PC	14P	11P	5.20
MV-1021	•	'n	NS	NS	NS	57C	32C	57C	46C	17C	11PC	14C	18C	110	150
MM-1022	•	'n	N.	NS	NS	130	Ø	20C	21C	7.6C	4 . 8PC	12PC	11P	10P	100
HH-1041	\$	'n	SN	NS	NS	16C	QN QN	2	Q	2	£	ę,	£	Ā	NS
1,1,2-Trichloroethane by Method 8010	ane by M	thod 8010													
MA-38D	100	NE	213	NS	NS	NS	NS	NS	NS	NS	NS	N.	SE	NS	NS
Tetrachloroethene by Method 8010	by Methox	1 8010													
MH-10	•	ME	6.49		NS	NS	NS	NS	NS	N.S	N.S	5.4C	ĕ	Q	Q
M-11	4	NE	2480		NS	NS	NS	NS	NS	SN	NS	25C	ę,	SX	QN
MM-12	4	NE	1260		NS	NS	NS	NS	NS	NS	NS	200C	610P	70P	38P
HH-14	4	N N	Ð		NS	SN	NS	NS	NS	SN	NS	7.6C	ē	Q	Q.
MM-22D	•	NE	13.5		NS	Š	QN	Q		e e	æ	Š	ě	QN QN	ÖN
MM-33S	4	NE	£		NS	2	9.8DL	8.7DL		ã	Q.	QN	ę	Q	ě
MA-38D	•	NE	260		NS	SN	NS	NS		SN	NS	NS	NS	NS	NS
M4-41S	•	NE	3.3		9.0	0.18DL		0.75DL		3.20	6.2PC	10PC	57P	370P	240C
MI-54	4	NE	NS		NS	4.1DL		ð		Q	QX	Ñ	£	2	QN Q
MM-55	4	NE	NS	NS	NS	130	797	47C	Q	25C	6.8C	3.0PC	1.7P	1.5P	1.4P
MV-128	4	N H	NS		NS	Q.		23DL	QN	Q	ę,	æ	2	ð	Æ
MW-1021		NE	NS		NS	2.8C		5.60	2.7C	3.30	1.3PC	1.20	1.80	1.50	1.4C
1,2-Dichlorobenzene	e by Method	od 8010													
MH-10	130	NE	8.69		SN	NS	NS	NS	SN	NS	NS	200C	210C	85C	140C
MH-38D	130	NE	147	NS	NS	NS	NS	NS	NS	NS	NS.	NS	NS	NS	NS
1,4-Dichlorobenzene	e by Method	od 8010													
MV-11	(LOQ) 0.5	.5 NE	Ş	NS	NS	SN	NS	NS	SN	NS	NS	2.00	2	XS.	Q
MH-14	(100)0.5	.5 NE	웊	NS	NS	NS	NS	NS	NS	NS	Z.	1.40	2	æ	£
M4-33S	(L0Q)0.5	S NE	æ	NS	NS	6.2NC	6.1DL	15DL	7.1DL	QN	£	8	NO NO	g	2
MM-54	(LOQ) 0.5	S NE	NS	NS	NS	SIDL	Q	Q	Q	Q.	Q	Ş	2	æ	2
M-61	(100)0.5	S NE	NS	NS	2.3	Q.	Q	Q	QN	2	£	오	Ñ	ð	2
MW-128			NS	NS	NS	QN	QN	5.7DL	5.5DL	ND	Q.	Q	œ	Q	æ
1,2-Dichlorobenzene	e by Method	od 8020													
MM-10	130	NE	S X	NS	NS	NS	NS	NS	NS	NS	N.S	200C	170C	120P	140P
1,4-Dichlorobenzene	e by Method	nod 8020								•					
M-33S	(LOQ)0.5	S NE	NS	NS	NS	4.2C	5.80	7.2DL	7.0DL	QN	2	Q	Ñ	ē	R
MH-55	(100) 0.5	S NE	NS	N.S	NS	QN QN	. 58DL		QN	Q	ã	QN	æ	NS	NS
MH-61	(100) 0.5	S NE	SN	NS	0.7	QN	QN		Q	æ	ğ	£	Q.	NS	NS
M4-75	(LOQ)0.5	.5 NE	NS	NS	NS	NS	NS		NS	NS	NS	0.730	2	SN	QN
All Units are ne/l					! ! ! !		= Dilut. out	of the	confirma	of the confirmation run				 	
שינו מוזרים פוב הפו ד							DITTOL	, , , , , , , , , , , , , , , , , , ,							

| Main tending | Main

Analyte Name	DAS	U.S. EPA	-	-	Round 3	4th Qtr.	4th Qtr. 1st Qtr.	25	3rd Qtr.		1 4	2nd Qtr.	3rd Qtr.	4th Qtr.	1st Qtr.
Well Rumber	Action Level	Primary MCL	1985 6/85	1985 11-12/85	1986 2-4/86	1986 9-12/86	1987 1-3/87	1987	1987 7-9/87	1987 9-12/87	1988 1-3/88	1988 4-6/88	1988 7-9/88	1988 10-12/88	1989 1-3/89
1,4-Dichlorobenzene by Method	ene by Met	hod 8020	1	# # # # # # # # # # # # # # # # # # #	1		 	! ! ! ! !		, , , , , ,			 	 	
MJ-128	(L0Q)0.5	.5 NE	NS	NS	NS	£	웆	3.4DL	4 . 2DL	£	£	윤	Ð	£	Ş
Benzene by Method 8020	4 8020	,	;	;	;	;	;	2	\$,	;	•	!	!	!
01-10	٠. ١	'n	SE	2 S	S	2 2	2 2	0 U	A 12	2 2	2 2	110		2	2 !
11-11	· .	n ·	SE :	Z I	S	22	e i	2	2 !	e i	2 !	200		SE	2
- 24 - 24	۲.	'n	SN	SX	NS	9.50	2 !	1.00		2	2	2	Q	NS	NS
MW-104	۲.	'n	r.S	6.0	Q	ę		Q	2	QN	2	£	£	NS	SE
MM-112	۲.	s	SZ	Ę	Ð	2.2NC		Q	2	Q.	£	Ş	Q	NS	NS
M-1000	۲.	'n	SW	0.7	QN	ē		Q	2	Q.	Q	£	Q.	NS	NS
M-1015	۲.	'n	NS	6.0	9	0.21	£	Q	Ş	QN	£	Q.	N.	NS	NS
MV-1021	۲.	s	SN	NS	NS	QN	Q	1.10	Q.	Q	2	Q	QN	NS	£
Toluene by Method 8020	d 8020														
75-24	100	NE	NS	NS	NS	230C	4.7C	2.7C	Q	0.410	£	2	Œ.	NS	SN
Vinyl chloride by Method 8240	y Method 8	240													
MA-10	7	-	SN	W.S	NS	NS	NS	NS	NS	810	SN	NS	NS	NS	NS
MH-54	7	1	NS	NS	NS	NS	NS	7.7	NS	20	NS	£	NS	NS	NS
Methylene chloride by Method 8240	de by Metho	od 8240													
M -11	0	NE	NS	NS	NS	NS	NS	NS	NS	1700	S	NS	NS	NS	X.
1,1-Dichloroethene by Method	ne by Metho	od 8240													
PE -10	9	7	SN	NS	NS	NS	NS	NS	NS	1100	SE	NS	NS	NS	NS
M-11	9	7	NS	SN	N.S.	NS	SN	NS	NS	46000	SN.	SN	NS	NS	SN
MM-12	9	7	NS	NS	NS	NS	NS	NS	NS	11000	NS	NS	NS	NS	NS
MV-14	•	7	NS	NS	NS	NS	NS	NS	NS	260	NS	NS	NS	NS	NS
M-15	9	7	NS	NS	NS	NS	SN	NS	NS	1500	NS	NS	NS	NS	NS
MH-53	9	7	NS	NS	NS	NS	NS	NS	NS	15	SN	2	13	NS	N.S
15H-54	9	7	NS	NS	NS	NS	NS	28	NS	17	NS.	2	NS	NS	SN
MM-55	9	7	NS	SN	NS	NS	NS	43	NS	77	NS	NS	43	NS	SN
MM-59	9	7	NS	NS	NS	NS	NS	22	NS	9.5	NS	NS	NS	SN	NS
MM-72	9	7	NS	SN	NS	NS	NS	NS	NS	460	670	770	099	NS	NS
MM-74	9	7	SN	SN	N.S.	NS	NS	NS	NS	NS	NS	14	NS	NS	NS
MM-76	•	7	NS	NS	NS	NS	NS	NS	NS.	NS	N.S	110	NS	NS	NS
MM-91	9	1	NS	NS	NS	NS	13	NS	NS	Q.	SZ	Q	NS	NS	NS
MA-1004	9	7	NS	SN	NS	NS	NS	NS	NS	NS	25	NS	13	NS	NS
MM-1005	•	7	NS	NS	NS	NS	NS	82	NS	NS	SN	NS	NS	NS	NS
1,1-Dichloroethane	ne by Method	od 8240								-					
M-10	20	NE	NS	SN	NS	NS	SN	NS	NS	330	NS	NS	NS	NS	NS
144-54	20	NE	NS	NS	NS	NS	NS	99	NS	8.5	SN	£	NS	NS	NS
MM-72	20	NE	NS	NS	NS	NS	NS	NS	NS	4 3	61	54	79	NS	NS
MM-76	20	NE	NS	NS	NS	NS	NS	SN	NS	NS	SN	20	NS	NS	NS
Total 1,2-Dichloroethene by Method	roethene by	y Method	8240												
MW-10	16	NE	NS	NS	NS	NS	NS	SN	NS	780	SN	NS	NS	SN	SZ
All Units are ug/1	/1		1 1 1 1 1 1 1	1	1	= 7IC	Diluted	Diluted out of the confirmation run	confirms	tion run		; ; ; ; ; ; ;	! ! ! !	• • • • • • • • • • • • • • • • • • •	
HW - Monitoring Well	1153					S S		Result was not confirmed in second column analysis	firmed in	second c	olumn an	alysis			
_	tration	,				Q	Nothing	Nothing detected							
						•									

LOQ = Limit of quantitation

NR = Not reported

NR = Not reported

P or PC = Identity previously confirmed

C = Analysis confirmed in second column analysis

NS = Well not part of the sampling program at the time of sampling, or Well was not sampled for a particular analyte.

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#	MS M	2 - 1/86 N N N N N N N N N N N N N N N N N N N	'	1-3/67 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	A C C C C C C C C C C C C C C C C C C C	7 - 9 / 87 N N N N N N N N N N N N N N N N N N N	9-12/87 NS	23 29 20 88 88 88 88 88 88 88 88 88 88 88 88 88	A	;	10-12/88 NS NS	1-3/89 NS
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	N N N N N N N N N N N N N N N N N N N		**************************************	S S S S S S S S S S S S S S S S S S S	340 377 377 378 378 378 378 378 378	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	N S N S S S S S S S S S S S S S S S S S	490 NS NS NS NS 420 420 25 25 NS NS	NS NS S S S S S S S S S S S S S S S S S	660 13 22 35	SN	S
	S S S S S S S S S S S S S S S S S S S			N N N N N N N N N N N N N N N N N N N	NS NS NS NS NS ND 17 17 NS NS NS NS NS NS NS NS NS NS NS NS NS	N N N N N N N N N N N N N N N N N N N	NS NS NS SB SB NS NS NS NS NS NS NS NS NS NS	20 NS NS NS 88 88 NS 420 420 25 120 NS	N N N N N N N N N N N N N N N N N N N	13 22 35	SN.	
				N N N N N N N N N N N N N N N N N N N	7.1 NS NS NS NS ND 17 17 17 18 NS NS NS NS NS NS NS NS NS NS NS NS NS	N N N N N N N N N N N N N N N N N N N	4.8 NS NS NS NS NS NS NS NS NS	NS NS 88 88 NS 420 25 25 NS NS NS	NS NS 29 29 NS	22 35	ē	SE
	X X X X X X X X X X X X X X X X X X X		~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	N N S S S S S S S S S S S S S S S S S S	NNS NNS NNS NND 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	S S S S S S S S S S S S S S S S S S S	NS N	NS 88 88 NS 420 25 25 120 NS	29 29 88 88	35	NS	SN
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	SN SN N	NS NS S	N N N N N N N N N N N N N N N N N N N	XX XX	NS 3.6 NS NS N	N N N N N N N N N N N N N N N N N N N	79 NS	120 NS	S	NS	SN	SE
	S S S S	S N N S S	NS N	S S S S	3.6 NS NS NS	S S S S	NS	NS	140	140	SN.	N.
	0 0 0 0 2 2 2 2	N N N S	N N S N S N S	N N S	NS NS NS	NS NS NS			NS	SN	NS	N.
	X X X X	N N S	N N N S N S N	N S	N N N N N N	S S S						
22 2 222:	NS N	S S S	NS NS	SX	NS NS	NS NS	10000	SN	NS	NS	NS	NS
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× × × ×	;	;	;	;	;	:	;	;	!	;	į	;
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S .	SN	NS	NS	SZ	SN	NS	8000	SN	SE	SN	NS	NS
	NS	NS	SN	NS	SS	NS	4700	NS	NS.	NS	NS.	NS
r o	NS	NS	NS	NS	NS	NS	350	NS	NS	NS	NS	W.S
5 5	NS	NS	NS	ΝS	NS	NS	1000	NS	NS	NS	NS	NS
S S	NS	NS	NS	NS	NS	NS	NS	55	NS	7.1	NS	NS
	SZ	NS	NS	22000	21000	22000	N.S	23000	NS	35000	NS	NS
S S S	NS	NS	NS	NS	NS	NS	NS	220	NS	700	NS	NS
	NS	NS	NS	NS	NS	NS.	5.3	NS	Q.	2.5	NS	NS
	NS	NS	NS	NS	18	NS	9.5	NS	NS	15	NS	NS
	NS	NS	NS	NS.	20	S.	7.4	NS	NS	NS	NS	SS
	NS	NS	NS	13	NS	NS	NS	5.4	NS	9.9	NS	NS
	NS	NS	NS	NS	NS	NS	NS	SN	NS	72	NS	NS
	NS	NS	NS	NS	NS	NS	530	790	1900	1100	NS	S.
5 5	NS	NS	NS	NS	NS	NS	NS	NS	11	NS	NS	NS
S S	NS	NS	NS	NS	NS	NS	NS	NS	21	NS	NS	NS.
	NS	NS	NS	NS	NS	NS	NS	NS	5.2	NS	N S	NS
MW-91 5 5 NS	NS	NS	NS	9.6	NS	NS	4.8	NS	7.6	NS	NS	SN
MW-120 5 5 NS	NS	NS	NS	NS	NS	NS	NS	10.0	N.S	8.7	NS	SN

All Units are ug/l

MW = Monitoring Well

LOQ = Limit of quantitation

NR = Nor established

P or PC = Identity previously confirmed

NR = Nor established

P or PC = Identity previously confirmed

NR = Nor established

NR = Nor reported

NR

RADIAN

Analyte Wame Well	Act lon	EPA 17	Round 1 1985	Round 2 1985	Round 3 1986	4th Qtr. 1986	1st Qtr. 1987	2nd Qtr. 1987	3rd Qtr. 1987	4th Qtr. 1987	1st Qtr. 1988	2nd Qtr. 1988	3rd Qtr. 1988		1st Qtr. 1989
	rever	MCL	0/83	11-17/83	09/4-7	9-12/80		1910-4	19/6-/	18171-6	- 1	99/0-6	- 2/88	28/21-01	1-3/89
Trichlorosthens by Method 8240	by Method	8240													
MV-128	'n	s	X.	NS	SN	SN	21000	25000	NS	NS	30000	NS	32000	SN	NS.
MM-129	٠,	٠	NS	NS	NS	NS	7.5		NS	NS	23	SN	200	SN	NS
HW-132	'n	٠,	NS	NS	NS	SM	87		26	NS	99	NS	9,	SN	NS
MI-136	'n	s	N.S	NS	NS	NS	NS		SN	NS	SN	NS	430	SN	NS
MA-1005	٠,	2	NS	NS	NS	NS	NS		NS	NS	NS	NS	NS	NS	NS
MM-1022	5	50	X.	NS	NS	NS	NS		SN	9.9	NS	NS	NS	NS	NS
Tetrachloroethene by Method 8240	t by Metho	d 8240													
M-41S	•	NE	SN	NS	NS	NS	NS	SN	NS	NS	5.5	NS	27	NS	NS
MM-55	•	Ä	NS	SN	NS	NS	NS	Q	NS	13	NS	NS	Q	NS	SX
Benzene by Method 8240	1 8240														
184-54	٠,	2	NS	NS	NS	NS	NS	2.18	NS	ON	NS	QN	NS	NS	NS
MW-102	۲.	\$	X.	NS	NS	NS	NS	SN	5.2B	NS	N.S	NS	NS	NS	NS
Cadmium by Method	Method 6010														
MH-33S	NE	10	NS	WS	NS	NS	QN	10	QN	QX QX	Q	NS	NS	NS	Q.
164-36S	NE	10	NS	NS	QN	41	NS	30	SN	NS	NS	NS	ě	QN	SN
MW-128	NE	10	NS	NS	NS	ĸs	QN	20	NS	QX	QN	NS	NS	NS	2
HW-139	NE	10	NS	SN	NS	NS	NS	NS	NS	NS	NS	NS	NS	Q	33
Chromium by Method 6010	of 6010						•								
HN-12	NE	20	NS	SN	NS	NS	NS	NS	NS	80	NS	10	21	NS	11
HW-31S	NE	20	NS	SN	61	NS	NS	NS	NS	ž	NS	ð	NS	NS	S.
H-44S	NE	20	NS	SN	ę	SX	20	W.S	NS	NS	NS.	53	84	38	55
MW-101	NE	20	NS	38	2	NS	NS	NS	62	SN	NS	16	SN	NS	NS
MW-1018	N.	90	NS	99	72	NS	NS	NS	SN	10	NS	o	13	11	SN
MM-1019	N.	20	SN	250	욮	NS	NS	NS	NS	NS	Ş	NS	SX	٥	80
Lead by Method 6010	010														
MI-12	NE E	20	NS	NS	NS	SN	SN	NS	NS	09	NS	Q	Q	NS	9
MW-1001	NE	20	NS	7	9	NS	NS	SN	NS	SN	SN	NS	NS	NS	NS
MW-1012	NE	20	SW	240	6	NS	NS	NS	QN	SN	NS	SN	æ	QN	SN
Mercury by Method 200.7	1 200.7														
S44-15	NE	7	NS	NS	NO ON	NS	7	NS	NS	NS	NS	Q	Q.	NA	NA
Silver by Method 6010	6010														
MH-1005	NE	20	NS	Q	Q	NS	NS	270	NS	NS	QN Q	NS	Q	Q	NS NS
Sarium by Method 6010	6010														
M-36S	NE	1000	NS	NS	100	1000	NS	NA	NS	, NS	NS	NS.	V.	350	SN

All Units are ug/l

MW = Monitoring Well

LOQ = Limit of quantitation

NE = Result was not confirmed in second column analysis

ND = Nothing detected

NE = Not responsed

NR = Not reported

NR = Not repo

